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ABSTRACT

Focusing on educational development in lesser developed countries, this paper examines knowledge about ways to improve the linking of the producers of educational planning (such as universities, institutes, and other agencies) to the potential users of such knowledge (such as technical assistance agencies, sponsors, client groups consisting of teachers and ministry officials, and primary groups consisting of students and their communities). The three principal objectives of the study were to explore (1) the potential for designing knowledge networks to achieve better utilization of existing knowledge, (2) the application of cost-effectiveness to educational planning efforts, and (3) improved sensitivity of knowledge networks to the distinctive needs of primary groups, particularly among the rural poor. Although not recommending a single optimal strategy for improving the utilization of educational planning knowledge, the report draws on a range of past planning experiences to illustrate some of the options and tactics available. Six case studies of network functioning suggest that in effective networks, knowledge flows both from the "top down" and from the "bottom up." (Author/JM)

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KNOWLEDGE NETWORKS FOR EDUCATIONAL PLANNING: ISSUES AND STRATEGIES

Barclay M. Hudson and
Russell G. Davis with
David Mason and Walter Siembab

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ABBREVIATIONS USED IN THIS STUDY

ECIEL	Estudios Conjuntos sobre Integración Económica Latinoamericana
ITDG	Intermediate Technology Development Group (London)
SPRU	Science Policy Research Unit (Sussex)
IIEP	International Institute for Educational Planning (Paris)
IAF	Inter-American Foundation (Washington)
AID	U.S. Agency for International Development (Washington)
SIDA	Swedish International Development Agency (Stockholm)
ACPO	Acción Cultural Popular (Columbia)
GOJ	Government of Jamaica
UCLA	University of California at Los Angeles
MDC	More developed countries
LDC	Lesser developed countries
IDF	International Development Foundation
AACTU	American Association of Colleges of Teachers Education
IRRI	International Rice Research Institute
CYSEC	Calcutta Youth Self-Employment Center
HIID	Harvard Institute for International Development (Cambridge, Massachusetts)
ICED	International Council for Educational Development (New York)

FOREWORD

Special Features of the Study

Conclusions of the Study are summarized in the final chapter, with emphasis on practical policy suggestions. The thrust of conclusions strongly reflects the study's initial purposes, however. Therefore it is useful to list the major purposes and issues of the study here at the beginning. These comprise:

1. Discussion of knowledge networks from the standpoint of knowledge users, including program sponsors, technical assistance agencies, and especially "primary groups" such as the rural poor.

2. Presentation of practical strategies for knowledge networking, based on a survey of both theory and past experience (Chapter VII), with major emphasis on case studies in drawing conclusions and cross-checking findings of the study (Chapters III, IV, VI).

3. Development of a typology of knowledge networks, and definition of descriptive variables characterizing differences between network types, in regard to their function, structures, measures of success, incentives and - most important - their implicit or explicit philosophy of social and economic development (Chapter III).

4. Comparison of Top Down and Bottom Up network strategies - Bottom Up strategies being organized around specific geographic problem sites, controlled primarily by knowledge users, designed to channel commitment, and designed for pooling of experience as well as objective scientific and technical information (Chapters III, VI).

5. Examination of different forms of knowledge utilization, including

the distinctive structures and strategies appropriate to four levels of knowledge utilization, comprising knowledge diffusion, exchange, application and validation.

6. A review of relative strengths and limitations in the methods and assumptions of planning models that play a part in knowledge networks (Chapter VI)

7. Discussion of methods for cost-effectiveness analysis of knowledge networks (Chapter V).

8. Examination of conflict among knowledge producers and users, and of ways in which opposing viewpoints may be inherent and even constructive for effective evolution of institutions served by knowledge networks (Chapter IV).

9. Review of the long range historical context of overseas technical assistance, suggesting that many of today's key issues for knowledge networking (such as promotion of self-reliance) reflect classic, centuries-old dilemmas of international development policy, and past pendulum swings between grand strategies of economic and technological investment, on the one hand, and close-up, grass roots social mobilization efforts on the other (Chapter I).

10. Attention to the role of universities in knowledge networks, not only as transmitters of scientific and technical information, but as brokers for learning from developing countries about the nature of "appropriate" technologies, better definition of "human needs," and re-thinking of value premises that have been either exaggerated or lost from view by industrialized nations in the process of modernization.

Scope of Issues and Methods

The broad purpose of this study is to improve ways of linking the producers of educational planning knowledge to potential users. More specifically, its objectives are to explore: (1) the potential for designing knowledge networks to achieve better utilization of existing knowledge; (2) cost-effective roles for planning agencies in these networks; and (3) improved sensitivity of such networks to the distinctive needs of "primary groups."

The first three chapters of this book discuss certain strategic factors affecting the design of an effective knowledge network. In the first place, there are very different meanings of knowledge utilization, each making different demands on network design and the role of participating agencies.

Secondly, much depends on how one defines the distinctive needs of primary groups, particularly among rural poor. This will affect the design of educational systems, the forms of planning required, and in turn the appropriateness of network strategies.

Third, the design of networks must take into account not only their functional educational mission, but the more tacit, intrinsic goals of the organizations involved. For example, if a university is to be engaged in a knowledge network, it is necessary to consider the goals and incentives that normally operate within academic organizations. Funding agency goals (explicit or implicit) are also important; different sponsors operate under different mandates and with varying degrees of cultural and professional sensitivity to the interests of their counterparts and clients overseas. The present study suggests a need to recognize situations where potential conflict may arise between the goals of primary groups, the goals of the planning agency, and the goal of maximizing knowledge flows.

These differences go to the heart of the networking problem. There are several groups involved here, with quite different perspectives on the nature of knowledge utilization and the benefits it confers. Before these parties can be integrated into a single enterprise, explicit attention has to be given to their differences, the validity of their respective positions, and the appropriateness of conflicting views. Knowledge networking is therefore seen as a problem of working out creative tensions among members of the network, and not simply a matter of opening information channels between ready-made producers and consumers of knowledge. This point is elaborated in detail in Chapter IV.

It appears unlikely that there exists a single optimal strategy for improving the utilization of educational planning knowledge. Appropriate policy depends on prior explicit choice among alternative definitions of knowledge "utilization," varying assumptions about the adaptability of technical assistance agencies to new roles, and differing views on the adequacy of traditional educational strategies to meet the distinctive needs of primary groups. The thrust of this report is not to set priorities in any of these respects. Instead, the intention is to draw on a range of past planning experiences to illustrate some of the strategy options available for educational planning aimed at a diversity of priorities.

Whereas the first three chapters deal with basic concepts, issues, and case studies of networking, the subsequent four are concerned with strategies and tactics. Chapter IV addresses the problem of integrating into a single knowledge network people and organizations whose knowledge, values, and experiential frames of reference are likely to be quite different. The theme of this chapter is that networks will usually give rise to tension among participants, and that this tension is fruitful if handled properly. It can be a sign of success in grappling with key difficult issues of technical assistance and educational planning. In some cases, a homogeneous viewpoint can prevail, but this is rare. In most cases, networking is not a gentle art.

Chapter V deals with the cost-effectiveness of knowledge networks. This application proves a severe test of cost-effectiveness technique: the costs and benefits of networks are many and indirect. Multiple publics are involved as well as multiple objectives, so that network strategies cannot be compared against a single dimension of costs or effectiveness. Several variants of cost-effectiveness are proposed to contend with these problems, ranging from planning balance sheet methods to a "compass" approach, which calls for grouping networks within a broad typology of case studies, and successively narrowing down to debate the pros and cons of relatively similar options.

Chapter VI addresses an important educational planning issue which is sharply highlighted in the particular context of knowledge networks. This is the issue of conflict between theories of planning method and theories of educational substance. The conflict derives in part from differences between planners and educators - in regard to their attitudes, knowledge bases, and work environments. The conflict is more deeply rooted, however, in a basic epistemological difference between those who work with formalized, rational, systematic, and often mathematically expressed models of educational processes, and those who take a more psycho-sociological approach to planning. The chapter notes major discrepancies between the nature of resource allocation models used in planning and the nature of substantive theories of social processes that apply to educational systems and learning behavior. The discrepancies are discussed on three levels: in terms of basic epistemological categories; in terms of specific models and theories; and in terms of a case study of educational planning for social action, which reveals divergencies in the way that planning method and social theory respectively interpret the same situation for policy purposes.

Chapter VII draws out practical implications from earlier chapters, in the form of a summary of technical assistance strategies for outreach to poor majorities. Both conventional and unconventional strategies are reviewed. In this chapter, as throughout the study, special attention is given to "bottom up" knowledge networks, or networks whose main focus and organizational base is located at the problem site itself. Bottom up networks are controlled by knowledge users rather than senders. They are characteristically sensitive to the need for adapting knowledge to local conditions, capable of integrating "soft" personal knowledge with objective, scientific and technical information, and designed to channel motivation and commitment as well as impersonal data. Differences between top down and bottom up knowledge networks are manifest on several levels: their structures; the content of knowledge transferred; the medium for communication; control over information input and retrieval; the reward system; performance indicators; and underlying philosophy of social and economic development. Bottom up networks are not necessarily superior, but the study gives them emphasis in order to offset the usual bias of technical assistance agencies toward top down approaches. In practice, the top down/bottom up distinction is somewhat artificial, because an effective network probably needs to incorporate elements of both, in order to maintain an effective dialogue between the partners in a knowledge exchange. For this very reason, however, the analytical distinction is helpful for discussing strategies aimed at keeping the two approaches in balance.

The term "bottom up" appears in planning literature frequently enough to merit its adoption in this study, but it carries an unfortunate connotation of building up from an "inferior" position. The present study is intended to correct that image. International experts have no monopoly on wisdom. Planners may still have more to learn from indigenous efforts at self-improvement than they have to teach in terms of delivering preconceived solutions. The present study suggests a danger of knowledge networks in their tendency to sanctify expertise at the cost of people's confidence to build on their own initiatives. It can be argued that knowledge networks have a responsibility to build up people's capacity to learn from their own experience as well as from others. The knowledge that flows through networks needs to include not just raw information but capacity to evaluate message content against rival interpretations of the problem situation. In this sense, planners have something to learn from indigenous programs about frames of reference appropriate for measuring the successes and failures, costs and benefits of educational programs. Without explicit provision for learning from the people served, technical assistance tends to bias the evaluation of needs, opportunities and solutions according to the interests and capacity of the delivery system, at the same time imposing an insidious dependency of the client on the supplier.

Chapter VIII concludes the study with a review of key issues raised in earlier chapters; a summary of policy implications that derive from these issues; and a list of still unresolved questions bearing on problems of knowledge networks.

The research for this project has been comprised of a variety of activities, including a survey of theory relating to knowledge diffusion and the transfer of knowledge to action; a review of case studies suggestive for prototype strategies of knowledge utilization; a series of conferences on knowledge networks, each progressively refining the conceptual basis and strategic options for knowledge development; the commissioning of several papers on selected problems of knowledge utilization identified in the conferences; on-going exchange of information with universities and technical assistance agencies pursuing similar work; and meetings with selected university and technical assistance groups in Europe to exchange views and findings.

The authors are grateful to the many people who have made substantive contributions to this project. Nevertheless, the authors accept sole responsibility for any errors and oversights.

CHAPTER I

INTRODUCTION

1. Definitions

Definitions will be important because of the interdisciplinary theory referred to in this study, the diversity of educational planning efforts reviewed, and the wide range of conceptions about the scope of "knowledge networks." An effort has been made to define concepts broadly enough to capture some unorthodox cases of educational planning. A good definition should allow one both to generalize about isolated experiences and also to make critical distinctions between the divergent ends and means of technical assistance and educational planning.

For convenience of inspection, the box below provides highlights on the major issues of knowledge networks, containing principle concepts of the study which will be defined more extensively in subsequent paragraphs. The major concepts are numbered to correspond with the definitions following in the next pages.

KNOWLEDGE NETWORKS for educational planning are concerned with the cost-effective dissemination, exchange, application and validation of information and learning resources, for the primary benefit of poor communities in lesser developed countries. Three focal issues may be distinguished:

--Design criteria[1] for knowledge networks[2] aiming at effective utilization[3] of educational planning knowledge;[4]

--Technical assistance roles[5] in knowledge networks, and their cost-effectiveness;[6]

--Assessment of the distinctive needs of primary groups[7] as targets of educational planning.

1. Design criteria. This term is applied in the sense used by architects: it refers to the initial selection of objectives or performance characteristics to be sought, and subsequent identification of design options to meet these objectives. The term "design criteria" denotes: (a) explicit attention to definition of client needs, revealed through active client participation in the design process; (b) avoidance of premature fix on a "one best" solution; (c) recognition that objectives are rarely fixed and *a priori*, but tend to evolve through exploration of concrete options, often into the project implementation stage itself. These views imply a bias toward evolutionary planning involving a strong learning component, or "planning from the bottom up" as opposed to one-shot, top down planning. (See Dunn, 1971; Friedmann, 1973; Waterston, 1965; Faber and Seers, 1972; Goulet, 1971, esp. pp. 161 ff; Caiden and Wildavsky, 1974.)

2. Knowledge networks. Network is a word that occurs frequently in the literature, seldom twice with the same shades of meaning. For purposes of this study, a "network" is formed by geographically separated institutions that span the production and utilization of knowledge and are linked through information transfer or collaborative action. Lesser Developed Countries (LDCs) are assumed to be the primary target for the use of knowledge produced in such networks, but is recognized that networks may also have the purpose of learning from LDCs as input to domestic policies on behalf of poor communities in More Developed Countries (MDCs). The present study refers mainly to educational planning institutions, but some reference is made to activity in other sectors, particularly agriculture, where parallel activities provide suggestive models for translating knowledge to action.

Components of a knowledge network include producers and users of knowledge. Of special importance are the characteristics of the users, and the critical linkages between relevant actors. For purposes of this study, it is useful to distinguish four major groups of actors: (a) technical assistance agencies; (b) sponsors, such as OECD or the World Bank; (c) clients in LDCs; and (d) primary groups representing the "ultimate" target of educational policies. Each may be a knowledge resource for another, and consequently, linkages are not to be conceived as a hierarchy, with technical agencies and sponsors at the "top" and educators and target communities at the "bottom."

Two broad categories of networks are distinguished in this study, loosely denoted "Top Down" and "Bottom Up" strategies. One can just as easily categorize networks by a number of other typologies, but this division has been chosen for two reasons: first, it accords with a general split found in the literature and among experts consulted in the course of this study, who tend to view networks either from the standpoint of the knowledge delivery system (Top Down) or from the standpoint of primary groups (Bottom Up). Second, this research has suggested that effective networks tend to combine features of both Top Down and Bottom Up strategies. Success would thus seem to depend on recognizing the differences between both views, and resolving the inherent conflicts between them. Keeping both views in balance does not come naturally for most organizations, but it appears to be an important facet of better knowledge utilization in the field of educational planning.

This project deals with networks primarily in terms of geographically separated sites for knowledge production and consumption. We recognize, however, that knowledge networks also apply to groups operating on the same site (for example in mounting a self-reliant program of integrated rural development), or even within the same building (for example a PERT chart used by a Ministry to coordinate the implementation of a comprehensive plan). We find the problems of networking on this scale to be fully analogous to the problems of international transfer, for in both cases, the main problem is not so much one of bridging distances as reconciling distinct *perceptions* of educational problems at hand. This point is elaborated at some length in Chapter IV.

3. *Utilization of knowledge*. One might equally use the term knowledge "use," but "utilization" denotes a deliberate program of *putting* knowledge to use in applications that are both feasible and appropriate. "Utilization" in this report specifically embraces four categories of knowledge networking:

a) knowledge *diffusion* among groups who work in the same media, sharing the same experiential base for interpreting data, and using it for similar purposes;

b) knowledge *exchange* among groups or individuals who do not share similar roles, problem definitions, incentives to act, or epistemological foundations, and for whom knowledge must therefore be translated across professional, cultural, political, language, and personal barriers, often requiring face-to-face interchange;

c) knowledge *application* involves a more stringent definition of utilization; it denotes concrete action traceable to knowledge diffusion or exchange, resulting in outcomes perceived by primary groups (target population), in this case, not only school children but groups affected by that schooling, such as parents, employers, and social action groups in the target community;

d) knowledge *validation* refers to evaluation of knowledge outcomes (both deliberate and unintended), coupled with a capacity to learn from experience (a memory), and a capacity to modify actions on that basis.

Knowledge *diffusion* and *exchange* come easily. The real difficulty of knowledge networking arises in the realm of knowledge *application* and *validation*. This is where the transition must be made between theory and reality, between ideas and action, between expectations and the surprises that lead to new knowledge.

The distinction between knowledge diffusion, exchange, application, and validation is discussed at length later in this chapter. Each form of knowledge utilization makes its own demands on a knowledge network, and there are important network design implications that stem from this fact.

4. *The knowledge base for educational planning*. Educational planning is the exercise of foresight in charting a course of action that will enhance learning. When applied to teaching/learning activity that is organized into programs, institutions, and education and training systems, *comprehensive and systematic educational planning covers the development and statement of goals; determination of policy and program alternatives; assessment of costs and resources and evaluation of outcomes or effects*; and *the monitoring of allocations decisions and implementation activity*. Results of this last step are fed back into what is a continuous process. This is the rationalistic view of educational planning.

Critics of rational planning claim that the systematic approach forces rigidity and limits the analysis of real life social situations. To get around the limits of systematic planning new approaches to planning have been suggested under a variety of names: transactive planning, incremental planning, creative planning, participatory planning, radical planning, advocacy planning, and social learning. These approaches are valuable as an antidote to systems rigidity and for orienting the planner to the importance of values, quality and social interaction as determinants of planning success.

These differences in style of planning are reflected most in the different knowledge bases which they draw upon respectively. The systematic form of planning activity can be codified to yield a body of knowledge for dissemination, exchange, application and validation. In contrast, the intuitions, feelings, and skills employed in social and political interaction, while crucial to the success of planning as a process, are not easily codified into systematic knowledge that can be disseminated.

The first, more conventional style of planning denotes a codified knowledge base, because it applies to teaching/learning activities that are organized into programs, institutions, and formal education and training systems. These systematic forms of activity can yield knowledge in the form of written theories, methods, and data stores, which can be broadly disseminated, and applied to new practices in similar institutional settings elsewhere.

By comparison, contextual knowledge is characterized by greater recognition of learning processes that are not organized into educational institutions but take place within social processes at large. The knowledge base which is drawn upon cannot be easily codified, particularly in relation to issues of subject content, educational quality, questions of ideology, and to the planner's use of intuitions, political skills, and sensitivities in assessing local requisites for effective action. Less emphasis is given to the reduction of abstract goals to concrete actions, and more to working outward from model instances of success, aiming at adaptation of "intact experience" directly at the level of the target communities.

The codified and contextual knowledge bases are not substitutes for each other, but complementary, each supplying strengths where the other is weakest. Both are comprehensive, but one with regard to the range of goals and alternatives considered, the other with respect to the richness of local constraints or opportunities for action. Both may be applied to a comprehensive view of education or development objectives. Equally, they might both apply to one aspect of education, such as curriculum development, or to one program or institution which is part of a larger system.

The knowledge context of these two planning styles is discussed further in Chapter II, along with their divergent implications for the design of knowledge networks.

5. Technical assistance roles. Technical information and services are typically provided by government, private, or university-based agencies. Knowledge networking sometimes calls for organizational structures, skills, and rewards different from those found in other types of technical assistance (see Chapters III and IV). For this reason, it is preferable to speak of "roles" rather than agencies in describing technical assistance strategies. Networking roles appear in an extraordinary diversity of institutional arrangements: through the research and extension service branches of universities; semi-autonomous branches of government agencies; specialized information services; and even collections of individuals united by common interest and an organizational letterhead. Some of the most interesting networks have evolved within the primary group setting, as illustrated by some of the case studies in this report (CYSEC, Acción

Cultural Popular, Ahmednagar College). Chapters III and VII give some idea of the variety of institutional settings encountered. Organization charts seem to count for less than functional role definitions, operational objectives, leadership and philosophical motivation, and sensitivity to the client's perspective on problems apart from purely technical considerations.

6. Cost-effectiveness. Cost-effectiveness is an issue of economics, and it therefore raises three basic questions that every economic system must address: what shall be produced? how? and for whom? (Samuelson, 1961, p. 17; Haveman, 1970, pp. 27-29). For purposes of this study, what refers to the knowledge base for educational planning (Chapters II and VI below); how and for whom refers to the strategies and clients of knowledge networks (Chapter III).

Chapter V gives more explicit attention to problems of cost-effectiveness analysis applied to technical assistance efforts. Issues addressed there include: (a) multiplicity of objective, reflected in the multiplicity of agencies involved; (b) costs as well as benefits that cannot be reduced to monetary equivalents; (c) appropriateness of including secondary and tertiary impacts of education; (d) data availability; (e) indicators of effectiveness; and (f) formats for comparison of costs and effectiveness that keep the "big picture" in view, including non-quantifiable costs and outcomes.

7. Primary Groups. This refers to the "ultimate" clients of educational planning - principally school children or adult learners, but by extension their households, the communities they live in, their employers, and others affected by their education. Most knowledge networks do not reach down to touch primary groups directly, but instead terminate at an

intermediate client, such as teachers, Ministry officials, and other decision-makers and change agents. When knowledge utilization leads to visible actions on the part of these "official" clients, this constitutes knowledge application. Knowledge validation, however, denotes a more direct focus on primary groups, involving either their response to educational treatments, or more active participation in the evaluation and design of educational services. Sometimes this leads to recognition of their onw capacity to generate knowledge, and engage in more active forms of planning "from the bottom up." Indeed many technical assistance programs explicitly identify this as a long-term goal of development.

Such roles for primary groups require a minimum capacity for self-organization, and contact with primary groups often takes place through representatives rather than people at large. Sometimes these representatives become difficult to distinguish from the kind of official clients that have been classified separately in this study, but the heuristic distinction remains useful. In Chapter III, it is noted that knowledge networks have significantly different functions depending on whether they deal with official clients on the one hand, or primary groups on the other.

In this report, primary groups are identified mainly with the "poor majority." The term "poor" is used with respect to provision of basic needs, such as health, housing, nutrition, literacy, productive employment, and democratic participation in social action. "Poor" does not necessarily refer to monetary level of income, which reflects consumption standards exported from more industrialized countries. Ther term "poor" also seems preferable to "underdeveloped," in the sense that the latter often suggests an inappropriate standard of "the modern sector" as a target and benchmark of progress. Modernization may in fact be a counterproductive standard for dealing with the specific problems of poor communities: modernization comes easiest to those who can already afford it, and pays best to those who can "deliver" modernization - planners included.

2. The Historical Context of the Networking Issue

Beginning over a century ago it was common to send missionary teachers to the poor countries, and in the history of technical assistance, some of the ways of the missionaries have come back into favor in recent times. Missionary activity has been criticized for being narrow and sectarian, as isolated, fragmented and small-scale given the vastness of the need in poor countries. Nevertheless, it was performed close-up to the problems of the poor and needy, and sometimes by dedicated volunteers who acquired, through long tenure and often per-force, deep knowledge of the language and culture and the needs and aspirations of the people they served. The missionary experience is mentioned because it may have something to teach, as development efforts now seek to reach the so-called poor majority, not reached effectively through modern and large scale development and technical assistance activity. The utilization of knowledge to assist this poor majority will be a central concern of later sections.

Activity in technical assistance, under secular or government auspices, began on a sustained and systematic basis almost a century after missionaries first went forth. Technicians, usually specialists in their field and often individualists, took on some of the pressing and technically demanding tasks of development which missionaries generally could not perform. Important technical problems were solved, only to reveal that there were constraints imposed on development by economic and social structures, and these in turn were supported by deeper lying cultural characteristics. It was at this point that academic cadres came in, first to supply the technicians in the applied fields of health, education, agriculture and engineering, and later to provide specialists in the problem of development itself. University-based economists addressed the general problems of economic constraints, and other social scientists attempted to increase knowledge of the political, social and cultural causes of poverty and lagging development. The field agent of the university social scientists was the "change agent" who tried to apply what little reliable and general knowledge there was to the social problems at hand, often with very little effect. One truth had been grasped at about this point - the process of poverty and underdevelopment was complex and not amenable to short-term solution through quick and heavy infusion of money, commodities, technicians and knowledge, especially knowledge from the sending countries. Still, there were scattered technical successes in the field, some with substantial development significance.

To pull together the fragments and to focus scattered effort to provide continuity over time, the "institution building" phase of development evolved. This strategy helped to insure a reliable source of knowledge and men from the rich countries and a place on the scene in the poor countries to deploy and use the available knowledge and manpower. There were two sides to this, the institution in the sender country, in the form of a university or agency resource bases, and the institution in the recipient country. Most institutions were built in the poor countries; very few were ever built to survive in the rich countries.

In some situations there were effective institutional partnerships between institutions in the sender country and institutions in the recipient country, but the very use of the term "sender" or "doner" and "recipient" or "client" revealed one weakness of the arrangement: the partnership was unequal and benefits were viewed as going one way, from donor to recipient. This truth was eventually perceived and a variety of measures, real and rhetorical, were conceived to redress balance and reduce the harmful consequences of dependency in development arrangements. At this point the received wisdom spoke for the need to provide aid with no strings attached to host countries, their institutions, and their experts. The time seemed right - the institutions were there in the countries, built, equipped, ans supported with "strong staff," mostly trained in the institutions of the "more developed countries." (Use of the terms "MDC" and "LDC," now in use, has been one of the terminological changes supported to take the sting out of poverty and underdevelopment and the feelings of inequality it engenders). The difficulty was that just about this time the need had passed from "institution building" to a stage that currently has no easy name. More precisely, the need for a new approach is clear, but a term for that approach is not easy to find. It is "extra-institutional," and the action is in the post-institution building stage.

When the unequalness of the partnership between MDCs and LDCs was perceived and chronicled, and when the evils of dependence as a destructive consequence of well meaning development effort was described, many in the MDCs were busily, though not always productively, engaged in self-flagellation. So engrossing and soothing was the utterance of "mea culpas" that it obscured the important fact that dependence was not alone an evil at the trans-national level, but was an even more difficult problem within the poor countries. In fact the institutions so dear bought and well built had not even gotten to the problem of dependence in their own countries, because many of them did not have enough will or capacity for outreach to create dependency relationships in their own countries. Many of the scholars were locked up and busy within their own walls. But many were not.

Awareness of the need for institutional outreach and the dilemma of dependency which could result came as donor countries discovered the "poor majority," either untouched by much of the development and technical assistance that had gone on, or when touched, the contact was remote, sporadic and ineffective. When touched close-up, the result was often dependency, whether the donar was foreign or national, the inequality and harmful consequence were there. This then is where the situation is as this is written. There is a need for knowledge that is intimate and deep of the needs of poor and untouched people in remote areas of developing countries. There is a need for knowledge of how to work effectively but within the essential dilemma of providing technical and development assistance without creating dependency. There is a need that this knowledge be valid and fresh, but that it also be comprehensive and systematic enough so that effort is not isolated, fragmented and small-scale, as it was when the missionaries first went into the field. How institutions in MDCs remote from the setting and the people, but uncomfortably aware of the symptoms of the problem, receive knowledge from the scene of the problem, and generate and transmit knowledge that can be utilized back on the scene, is the problem, at least for those institutions in developed and developing countries who want to participate.

The historical legacy which led us to this statement of the problem is summarized in Figure 1. This outline points to the fact that substantial progress has been made, and that we are perhaps in danger of

Figure 1

Historical Context of Technical Assistance: Background on the Problems Confronting Knowledge Network Strategies

Technical Assistance Strategies	Major Strengths of the Strategy	New Problems Confronted Under the Strategy
I. MISSIONARIES (19th Century and earlier)	a. Close-up picture of development problems b. Dedication to needs of poor majority	1. Small scale (limited mobilization of resources for mass change). 2. Little impact on techno-economic infrastructure.
II. POST-WAR EFFORTS - Change agents - Technicians - Government and foundation sponsorship - University backstopping	c. Deeper, more diverse expertise d. Political leverage for change; large scale social investment; dramatically raised expectations	3. Fragmentation of efforts (whole less than sum of parts). 4. Lack of continuity over time (no learning from failure or systematic building on success). 5. Naivete of technical solutions (over-generalized models; little reference to social/political context; problems of absorptive capacity for innovation).
III. INSTITUTION BUILDING - In LDCs - In MDCs	e. Coordination, continuity, memory f. Absorptive capacity	6. Institutionalization recreates earlier problems within new agencies. - lack of coordination, e.g., between universities - lack of responsiveness to needs of LDCs or MDC sponsors - expensive overhead. 7. Unequal partnership (MDC dominance over LDCs).
IV. NETWORKING	g. Streamlines institutional approach to coordination, continuity and learning h. Clearer problem focus, more diverse resources and experience base i. More equal participation by LDCs and MDCs; knowledge flows both ways. j. Stronger emphasis on outreach to target community.	8. Problem of keeping generalizable knowledge faithful to the complexities of action. (Discussed in Chapter III). 9. Problems of implementing planning knowledge (See Chapter IV). 10. Parodox of helping others to become more self-reliant

neglecting real achievements from the past in the rush for new solutions. The problems encountered in recent attempts at networking may find valid answers in the much earlier work of missionaries. At the same time, the summary should make it clear that a return to the missionary model is a false solution if it fails to somehow re-integrate the lessons of more recent history. Otherwise, we may simply find ourselves repeating the last hundred-year cycle all over again. Indeed one of the major problems of technical assistance has been the rediscovery of problems and reinvention of solutions without adequate thought to the past.

The specific problems facing knowledge networks today are shown as points 8 through 10 in the historical table. Subsequent chapters of this report will take up these points in turn, as noted in the table. In each case, an attempt will be made to maintain this overall historical perspective, keeping in mind that solutions which seem very attractive at present can be the undoing of past solutions to problems that will then be unleashed upon the planner whose eye is only to the future.

3. Four Categories of Knowledge Utilization

The design and evaluation of knowledge networks can give rise to much fruitless debate unless care is taken in defining clear objectives for knowledge utilization. As stated earlier, it is helpful to distinguish four categories of knowledge use: dissemination, exchange, application, and validation. Each sets different criteria for measuring the effectiveness of technical strategy of knowledge networks. Each also provides a more homogeneous category for grouping case studies of educational planning efforts as a basis for making valid cost-effectiveness comparisons. The four categories are briefly reviewed below.

Knowledge Dissemination. This is taken to mean:

(a) The employment of "general use" communication channels: Journal articles and monographs; classroom and other training facilities; seminars and professional meetings; broadcasts and mail-outs. The term "general use" denotes that facilities are not restricted to one particular form of message or mission, but are accessible to a wide variety of senders and users, involving little esoteric skill or other restrictions on their use.

(b) Communication is primarily one-way. Included here are one-way communications of a reciprocal nature, for example, mutual participation in an information clearinghouse like ERIC. Listener feedback, while it may be deemed useful, is dispensable for any package of knowledge disseminated.

(c) The specific identity of knowledge users may remain unknown; as well as specific applications of knowledge disseminated. Low-cost dissemination of information calls for broad audiences (economies of scale) and minimum feedback or validation of knowledge, which involves expensive monitoring of practical applications. Problems of relevance and communicability also arise unless a homogeneous audience can be defined. Consequently, dissemination requires that receivers and senders be organized into standard institutional roles such as professionals, researchers, trainers, students, administrators. The less that dissemination channels identify specific users, the more they must identify specific classes of users sharing the same professional skills and vocabulary, academic disciplines and paradigms, educational and cultural backgrounds, and social settings for interpreting the significance of knowledge transmitted. Examples would include consortia of universities (for example, England's

Inter-University Council for Higher Education Overseas); technical assistance officers (for example, UNESCO conferences on educational planning); or groupings of users by specific subject interests (such as users of ERIC). Dissemination among dissimilar institutions may also take place by linking individuals within them who share common backgrounds: old school ties, prior association with particular projects, shared views on development problems and priorities. A good example of this is the use of "panels of experts" by the Intermediate Technology Development Group (London) and by the Canadian Research Council.

When knowledge is fed into a "dissemination" type of network, it tends to be treated as a set of specific facts and concepts which are discovered, and capable of being stored and retrieved when needed. It retains its message even when disembodied from a specific setting. In this view, knowledge is an inert substance, universally valid, and unchanging: new knowledge accumulates in publications and reference files and in experts' heads, and old knowledge gets weeded out. Thus, knowledge has an existence independent of whether anyone puts it to practical use or not. Applications are considered as a separate issue, and not a touchstone for putting a value on knowledge or knowledge generation efforts.

It can be argued that knowledge dissemination opens paths to actions that would not be hard to identify in advance, even by those who produced the knowledge. Evidence includes:

- -- studies of innovation diffusion, indicating that at least for the "early adopters" of new practices, knowledge by itself can be a motive force, unaccompanied by other resources that a more "enriched" network of technical assistance might provide.
- -- significant educational reforms have often been the result of indirect dissemination of results from policy studies, rather than direct links between researchers and policy-makers.

-- Dissemination helps translate new ideas into "good currency," fostering "climates of belief" (Cohen and Garet, 1975), and creating the necessary fertile ground for specific proposals.

-- although there may be a low probability that any given recipients of knowledge will follow up with a specific action, some of the most significant programs in education have resulted from improbable combinations of people and ideas. The Comilla program in East Pakistan was modelled after the Land Grant College idea from the United States (Raper, 1970); Colombia's impressive rural radio school program ACPO, derived from the fact that a rural priest happened to know something about ham radio operations. These are only anecdotes, to be sure; but significant change in a major educational system is so rare that isolated anecdotal data are often all we have to work with.

The major shortcoming encountered in the dissemination literature is bias toward professional institutions as repositories of wisdom, and less attention to action programs as sources of knowledge. Dissemination is generally viewed only in terms of knowledge transfer from MDCs to LDCs, from academic centers of excellence to action agencies, from rich to poor communities, and from professionals to laymen. It is easy to be trapped in the same bias, even when it is recognized and resisted. Researchers based outside the poor communities must constantly remind themselves that dissemination also refers to Bottom Up knowledge transfers - from action to new knowledge, from LDCs to MDCs, from laymen to professionals, and from poor to rich. This has special significance for educational planning on behalf of poor communities. The present study has suggested that some of the best examples of educational planning derive from indigenous efforts (see the cases of Bottom Up networks described in Chapter III). This indicates a major need for focus on a strategy of dissemination outward from development actions, along with more traditional networks of dissemination outward from centers of higher learning.

Knowledge Exchange. "Exchange" denotes a more interactive form of knowledge utilization, than "dissemination." As educational planning knowledge passes from the context of knowledge "producer" to "consumers," it requires various transformations: from general models to specific data requirements; from technical procedures to administrative ones; from academic paradigms to specific scenarios; from general goal statements to incentive structures operating in the implementing agencies; from procedural issues to political and ideological ones. Each of these transformations may also take place in reverse, moving from specific to general, from practice to theory, from ideological to technical. Thus, knowledge exchange denotes a mutual learning process, involving reciprocal feedback between producer and consumer. This involves a deliberate and continuing process of shaping knowledge to specific user needs. Knowledge "exchange" contrasts with "dissemination" in the following ways:

(a) The specific identity of the user is generally known, so that clarification of specific user needs can become part of the exchange process. Efforts to identify users can be seen in World Bank country studies; the use of anthropological field work to design non-formal education projects; or special pre-investment studies of the location and characteristics of the poorest communities as was carried out in Costa Rica.

(b) Knowledge becomes transformed in the process of exchange. This contrasts with the case of dissemination, where knowledge can be treated as an "inert" substance, universally valid, and unchanging. In contrast, knowledge exchange refers to distinct personal and institutional perceptions about what is at stake in the utilization of educational planning knowledge. In this view, the meaning of knowledge is not limited to the words, formulas and information media that give it expression, but gets its significance from the way it is applied and the way it makes a practical difference for people who consume it for specific purposes.

(c) Knowledge exchange generally involves more than the intact, undistorted transfer of information from one party to another. It may also require a shift in the conceptual framework of the knowledge receiver or sender in order for each to understand the significance of information to the other. The exchange may be modified accordingly - either in terms of vocabulary, scenarios for depicting the ramifications of ideas, ideological references, level of specificity, or possibly even in the use of games and simulations.

(d) Compared to knowledge dissemination, exchange is likely to be more costly per "message unit," but this is the price of seeking a shared reality through dialogue.

There are several reasons why a person engaged in knowledge exchange may resist conceptual shifts. It may be seen as a form of weakness reflecting adversely on one's bargaining position or professional vulnerability (Goulet, 1971). It requires a departure from previous assumptions, perceptions and understnadings built up with one's usual colleagues, at both personal and institutional expense (Lawrence and Lorsch, 1967; Nathan, 1973). For some purposes, agreement on planned action might require that differences in ideology, and stakes in the outcome, be left implicit rather than thrown up as bones for contention (Lindblom, 1965; Benveniste, 1975).

One major virtue of knowledge exchange is that it may reduce the sheer volume of information that deluges technical assistance agencies and their clients, through indiscriminate dissemination. (Kenneth Boulding has proposed as the First Law of Knowledge that the problem is not one of getting more information, but filtering out noise.) This research has not yet revealed objective grounds for determining how an organization can identify "critical" knowledge from the volume it must routinely process. Criteria can probably be developed based on specific identification of user characteristics. For example, U.S. Office of Education efforts to disseminate innovative educational practices suggest that their adoption by teachers can be enhanced by efforts to "target" dissemination toward well-defined groups of potential users. Dissemination efforts aimed at more general audiences, on the other hand, have met with fairly consistent failure (see Berman and McLaughlin, 1974).

Among more successful networks, special attention has often been given to the transfer of not knowledge alone, but also attitudes that will help professionals mingle directly with practitioners in the field, thereby developing mutual trust and two-way learning; this, as opposed to "preaching expertise" out of context. Network success may hinge less upon a grand organizational design than it does on the programmatic details which shape attitudes of individual members (see Bowman; Nelson; Swanson; RAND; Pitts).

Knowledge Application. "Application" denotes the effective utilization of educational planning knowledge to bring about actual changes in educational policies and their implementation. Effectiveness is measured in terms of events beyond the planning process itself: knowledge effectiveness thus becomes defined in terms of knowledge in use.

A logical way to close the gap between knowledge production and practical applications is to house them in the same institution. A classic example is the integration of research with teaching and technical assistance functions, in organizations like the International Rice Research Institute (IRRI), ACPO (described in Chapter III), Comilla, and the original Land-Grant College model. In all of these, the idea was to combine applied research, service to primary groups, and development of new knowledge based on feedback from on-going action.

Some agencies have made a point to combine these function even at the level of individuals. The British Government prepared a white paper Government Research and Development (HMSO, 1972, Command 5046), which emphasizes the need for training scientists and administrators in the rudiments of each other's disciplines, to facilitate a faster transition between practice and theory, ideas and action.

Bridging the gap between knowledge producers and users is made harder by recent trends in educational planning subject matter, away from the hard core of educational planning (man-power analysis, decision theory, econometric modeling) towards "qualitative" planning. "Evaluation," "attitude change," "self-reliance," "brain-storming," "problem exploration," seem to be terms very much in vogue. Concepts like these are frustrating, however, from the standpoint of delivering a "package" of knowledge to a client.

The producer-to-user gap becomes broader when knowledge development is carried out by one institution and applied in another. An illustration of this process is provided in D. Lingwood and E. McAnany, "Scientific Information Flow and National Development: A Study of Brazilian Chemists," Institute for Communication Research, Stanford University, July 1971. The geographical, organizational, cultural, and environmental differences between knowledge producers and users in this model are not extreme, but logically, there are heavy costs of making the bridge. There is also more chance for knowledge to get lost on the way, and feedback comes slower if knowledge proves deficient.

A caveat should be mentioned in regard to strategies of knowledge application. First, there is a danger that, if "successful" networks are judged only by the practical uses or "cash value" of the knowledge transferred, the networks will tend to be captured by political and commercial interests that sponsor technical assistance efforts. For example, it has been argued that in the United States, Land-Grant college research has been biased toward mechanization and heavy reliance on energy, fertilizer, and pesticide inputs, as a result of university cooperation with manufacturers, to the detriment of small farmers originally intended to be served by the Land-Grant programs. (Long and Groskind, 1973.) For this reason, it may be unwise to set a goal of maximizing knowledge application. The aim should be a more controlled optimum, with greater attention to the indirect and unintended outcomes of mounting a network effort. Although universities have long considered the search for knowledge a good thing in its own right, the benefits of applying knowledge have to be weighed more carefully against the costs. For example, methods that would assure maximum utilization of knowledge include forms of command planning that could eliminate democratic discussion of policy, and could take forms of action that would eliminate the possibility of experimentation along lines less grounded in solid knowledge but nevertheless more directly addressed to the broader aims of development. It is important not to do things only because we know how. It also is necessary to know why and to what effect.

By way of an example, the effort to develop the Sehel region in Africa through the sinking of deep-water wells has resulted in the shift of the "ecological burden" from the limiting factor of water to the carrying capacity of the land. In effect, the new abundance of water has allowed an increase in cattle population to the point where they destroy the grass cover, creating small but spreading deserts around the points where wells had been dug. By analogy, one might ask what happens when knowledge no longer becomes the limiting factor in the activity of people in rural areas: where will the burden of the social ecology then fall — upon fragile traditional cultures? upon the exploitation of unreplaceable natural resources? upon the capacity of the urban "commercialized" economy to absorb labor? In the planner's pre-occupation with knowledge application, he often looks so hard for intended results that the broader often unanticipated outcomes go without notice. This is where knowledge validation attempts to go beyond knowledge applications.

Knowledge Validation. Some will dispute the contention that "validation" of knowledge is an important component of knowledge utilization. Good educational planning, however, is an iterative process, a long-term involvement in actions that need to be continually monitored and reformed, both for lessons learned from success, and adaptations made necessary by failure.

Validation of knowledge may be addressed to any of several discrete issues, each with distinct ramifications for educational planning networks and the form and content of knowledge involved.

(a) On one level, knowledge may be utilized to validate facts, or questions of pure efficiency in the relation between predetermined ends and means. Planning may thus attempt to evaluate the best (most efficient) way of expanding non-formal education, taking into account available media technologies, cost and financial considerations, and assessment of needs. Where validation differs from mere application of plans is in critical discussions of key assumptions, formation of hypotheses, and on-going review of these problematic areas of doubt. An example is Arrigazzi's (1972) review of World Bank plans in Chile.

(b) On another level, planning may attempt to validate knowledge by the use of action programs as "live probes" into the underlying reality of development processes. Here, the focus is on causal relations. Doubts are not suppressed but made explicit, the object being to acquire new knowledge as well as to apply what is known. The foundations of analysis may shift from economic models to other, more varied "systems of explanation." The "logical framework" used by the U.S. Agency for International Development (AID) is a significant example of knowledge validation in this sense, raising key issues not only concerning a project, but also the environment which mediates its effects. (The "Logical Framework" is discussed further in Chapter V.)

(c) On a third level, planning efforts may require validation in terms of the range of outcomes at stake, including unintended second- and third-order consequences. Guy Benveniste (1975) makes a useful clarification between planning outputs (the focus of knowledge application) and outcomes (the focus of knowledge validation). Outcomes are "the consequences of the outputs as they interact with the environment." In order to address outcomes, we cannot consider technical agencies' knowledge in isolation, or partial it out from other agencies they work with. The more a planning agency succeeds in going beyond one-way knowledge dissemination, exchange, and applications to engage in knowledge validation, the less of a clear dividing line there will be between the agency's own contribution and that of its counterparts. By the same token, it will become more difficult to assess the cost-effectiveness of a knowledge network because its role will no longer be isolable, but will have become - where most successful - an integral part of the entire apparatus of aid policies and counterpart actions - achievements, blunders, and all.

As knowledge validation casts its broad net over planning results it must begin to incorporate anthropological, political and ideological perspectives on the significance of planning efforts. Ordinarily, the ostensible "client" is assumed to specify objectives rather than the planner, but who is the real client: the sponsor who provides the funding? educational officials? school children? Who decides whether educational planning should focus on the efficiency of the educational system itself, or speak to the larger issues of development?

Such questions arise far more frequently in recent years than they did a decade ago. They were frequently voiced by planners, educators and researchers interviewed in Europe and the United States under the present study:

-- "Even if we could measure cost-benefit ratios for knowledge transfers, how can we tell if we are being cost-beneficial from others' standpoints?"

-- "To say we are doing something well is not to say we are doing any good with it."

-- "Usually when we talk about cost-effectiveness, we are really talking about cost-feasibility, or cost-convenience, or cost-profitability from our own side of the transaction."

Carl Widstrand, interviewed at the Scandinavian Institute of North African Studies, raised similar questions in his paper "The Evaluation of Rural Development Projects" (p. 114):

> What does 'improve the quality of rural life' mean? More fun? For whom? To make the elite stay? Making money? . . . more cows? . . . the new Embassy nightclub in Makutano? . . . the resident evaluator in Kapengurita? . . . A new busline to be able to get out of the place?

Oscar Gise at IDS (Sussex) commented that especially since Dudley Seers' 1969 article, "The Meaning of Development," more attention has been given to the question of what outcomes follow from development programs. The 1975 Dag Hammarskjold Report summarizes much current thinking, laying out development priorities in terms of:

- -- the satisfaction of basic needs - beginning with the eradication of poverty - as the focus of development (food, habitat, health and education);
- -- self-reliance and endogenous action, geared to local strengths;
- -- harmony with the environment (for example, recognition of "outer limits" to consumption by MDCs).

Recognizing that specific development programs must be accountable to higher level objectives, an AID evaluation manual proposes that program assessment go beyond considerations of efficiency and effectiveness to deal with the "significance" of outcomes with regard to over-arching goals and objectives (AID, 1974). Determining the exact meaning of significance, and for whom, is no simple task.

CHAPTER II

THE KNOWLEDGE BASE FOR EDUCATIONAL PLANNING

A first step in the design of effective knowledge networks is to identify the kinds of educational objectives being sought. In addition, it is important to identify the form and content of knowledge to be transmitted, as a guide to the design of an appropriate mechanism for its transfer. These matters are addressed in this chapter in the following sequence:

1. Conventional information base for educational planning.
2. Unconventional information bases.
3. Educational planning and social indicators.
4. A format for evaluating selected indicators.
5. A knowledge base for determining technical assistance requirements.

1. Conventional Information Bases for Educational Planning

In the definitions given in Chapter I, two forms of educational planning knowledge were described. In the more conventional rational and systematic approach to planning, knowledge is generally expressed in codified form, and as such it presents a traditional medium for information transmission in knowledge networks. It is scientific and replicable in character and designed for use in fairly aggregate and generalized forms of analysis.

The second form, contextual knowledge, applied to situations that call for greater judgment in the interpretation of needs and resources, greater reference to specific contexts of application, and more specific examples of action to interpret the meaning of information and plans. Knowledge is related more explicitly to "interact experience" of primary groups in solving particular problems, and it draws on less conventional bases of information than codified knowledge. Discussion of contextual knowledge will be taken up in a later section of this chapter. The following paragraphs are focused on the conventional information base for educational planning, as it affects the design of knowledge networks operating with codified knowledge.

This knowledge consists first of schemes and formats which specify the demographic, social, economic, and educational data necessary for educational planning. Statistics or indicators used in planning are derived from these data or from data gathered and analyzed by theories and methods of social science investigation and research. The results are incorporated into models and routines used in the major planning activities of goal development, policy analysis, program evaluation, and monitoring. Some of the major theories, models, and methods used in planning can be listed:

1) Models and methods of formal logic can be used for analyzing and systematizing goal statements and policy alternatives, e.g., propositional calculus including truth table arrangements, inference testing, and decision models and analysis. Decision analysis can be structured and quantified to an extent by introducing probability calculus. Decision analysis can be used to analyze and test policy and program alternatives and to array and test allocations decisions.

2) Curve fitting can be applied to derive trends and to project demographic, economic, social, and educational goals translated into target and target fulfillment paths.

3) Demographic models and methods using component analysis and cohort survival formats can be used to project propulations and from this to derive educational targets and target fulfillment paths.

4) State space models, markovian process models, and control models can be used to trace educational systems flows in response to scale and targets of plans, or to project supply in a manpower-requirements-planning exercise.

5) Systems analysis can be used to chart interaction among components of complex educational systems, and PERT charting and critical path analysis can be used to schedule plan development and implementation over time.

6) Manpower-requirements planning models can be used to project economic goals and education and training requirements and targets.

7) Since planning deals by definition with the future and not all is amenable to quantification, there are also methods for projecting future states through consensual formats such as Delphi, through logical tracing such as cross-impact matrices, or through scenarios written within the constraints of envelope curves.

8) Goals may also be derived from needs assessed through censal, survey research and sampling models and methods.

9) Programs can be evaluated and monitored through test/measurement and psychometric methods.

10) Production function analysis can be applied to derive the input-output relationships of education. The analysis is usually based on least squares and regression approaches. The resulting input coefficients are useful in evaluation and monitoring and as input to cost-benefits and cost-effectiveness analyses. Inferential statistics applied in survey research or in control-experimental studies can also be used for evaluation and monitoring.

11) Optimization models and mathematical programming technics can be used to plan allocations and, through sensitivity analysis, to simulate and test possible alternatives.

These and other similar models, methods, and techniques are the heart of systematic educational planning. Even with this vast repertoire of theory and method, there are some limitations in applying systematic models and methods to educational planning. Some of the major shortcomings are:

- a tendency to exclude primary groups from the planning process;
- poor (some would argue impossible) calibration of aggregate models to local conditions;
- difficulty in adapting analytic derivations of input-output relationships to decision contexts ruled by multiple objectives; and

- failure to deal effectively with qualitative problems in education, ranging from value positions, political considerations, and contemporary historical circumstances that bear on social mobilization for change.
- problems in accounting for factors that can serve as substitutes for formal education, such as on-the-job training; redesign of production processes and job qualifications; mobilization of groups peripheral to the labor force; shifting of traditional curriculum subjects to mass media and public campaigns.

Regarding the last point in particular, it is well recognized that learning can result from education that is not formally organized, and educational planning is not always systematic. Planning may also be applied to one aspect of education, for example, to curriculum or to teacher training; or planning may be applied to one program or institution which is part of a larger system. Hence, planning is not always comprehensive or systematic.

Most planners who have operated in reality are aware of the limits of their methods, but the newer, less conventional planning styles force more explicit consideration of the limitations. They do not offer much systematic theory and method which can be codified as knowledge for dissemination or exchange, although they are critical for understanding the context in which educational knowledge is applied and validated. Planning knowledge is applied and validated in a social context, and social interaction is a significant determinant of the outcome.

There is also the view that more socially oriented planning approaches, for example, participatory planning or transactive planning, are more effective when the planner must work with primary groups, especially poor people, minorities, and individuals and groups working in an unequal and dependent relationship with more expert technicians serving richer and more powerful interests. There is the claim that participatory, transactive, and advocacy planning reduce dependency and thereby better serve the interests of primary groups. The assertion is untested but plausible, and this issue is taken up again in later parts of the report (Chapters III and VI). In application there are always blends of the two approaches - the more conventional rational forms of planning and the newer ones based on a more contextual knowledge base.

2. Unconventional Information Bases: "Contextual" Knowledge

Intuitions, feelings, and skill in social and political interaction are critical to the success of planning as a process but are not easily codified into systematic knowledge that can be disseminated. Moreover, there are important forms of learning that result from education which is not formally organized, and educational planning is not always systematic. Many planners began in close-up, participative planning and development at the village level, moved back from this and went into a phase of systematic and aggregate level analysis and abstraction, and have kept in touch with reality through the years by moving back out to where the action is. The reason such alternation and resulting tension is necessary is that otherwise the planner becomes abstract about the need to be concrete, authoritative about the need to be participative, remote in calling for engagement, and precise in prescriptions for fuzziness. Only a fool believes that a number can represent a child or that a systems model reflects educational experience, but numbers and models are widely used and, when appropriately confronted by reality, can serve a useful purpose.

When circumstances prevent direct and complete knowledge, as indeed they do even very far down in organizational echelons, then the planner remembers what he can from the real world, applies this recollection to the interpretations of the abstractions he has at hand and must deal with, and checks things out in reality as he goes along.

The major difference between conventional information bases and the unconventional ones is that the former provide a well-understood context of institutions, situations, and structure of assumptions, theory, and method which give information a shared significance and validity among its various users. Unconventional information bases are those which lack this structure and have to supply their own contexts; hence the term "contextual" knowledge. This form of knowledge comes to the fore in almost every planning situation in some degree, but it has a more prominent role where:

- problems and solutions are not well defined,
- incongruent world views are superimposed upon the same situation,
- local events or conditions overwhelm recognition of shared realities that would aid more systematic comparison of experiences among different communities, or
- a human need emerges to create a unique world of one's own making, out of personal experience, aiming at a sense of identity, competence, control over personal destiny, or perhaps self-protection.

Each of these points can be elaborated, and others could be added, but here it is sufficient to say that there probably exists a basis for prescribing the appropriate balance between codified and contextual knowledge, with relative weights shifting from one type of situation to another; and strategies for knowledge networking ought to take account of these balances. Chapter IV looks at network design with this requirement in mind, but an example here might be helpful. Various writers have dealt with the question of "personal" or "tacit" knowledge (Polanyi, 1962; Friedmann, 1973), and the various cognitive levels of information processing (Dunn, 1974; Beer, 1972). There is fairly close agreement that some of the most advanced skills in problem solving call for reference to personally experienced, concrete, intact situations which allow imagining and creative exploration rather than rigorous mechanical thinking in abstractions.

This simply implies, as part of a design for knowledge networks, that funding should be provided for site visits as well as data banks, for jeeps as well as airplane tickets, and possibly for some consulting fees for local folks to educate the foreign experts.

Contextual knowledge displays some of its own weaknesses:

- limited exposure to programmatic alternatives derived from a broader range of experience elsewhere.
- goals tacitly embodied rather than explicitly stated, or brought to the surface only in cases of conflict, and
- difficulty in describing and transmitting past experience in codified forms that can be given broad dissemination.

It should be stressed again that while the two approaches are complementary, they also have distinct functions in planning. The challenge is to bring these two distinct types of knowledge to bear simultaneously on educational planning. The reality addressed by educational planning does not lie somewhere "in between" codified and contextual knowledge. Instead, the truth lies at both extremes and reveals itself through a binocular vision from both vantages.

The problem of integrating these diverse images remains largely unsolved. Yet it presents a challenge to designing an approach to the issue of knowledge networking that may prove more fruitful in the long run than current alternatives - endless criticism among proponents of each school about the (generally accepted) limitations of the other, or historical oscillation between one and the other in vogue, or superficial integration of the two in ways that do justice to neither.

3. Educational Planning and Social Indicators

The problem of indicators has long plagued educational planners, just as the problem of developing adequate criterion measures has never been fully resolved in educational tests, measurement, and evaluation. There may be no perfect resolution to either problem, for there are many paradoxes and anomalies. Here the focus will be on the problem of planners in centralized offices attempting to deal with educational services for primary groups in isolated areas.

Indicators developed by central authorities, for assessing plan-goal attainment or for policy outcome evaluation, may be irrelevant or invalid for the situation of the primary group. More likely, the indicators are partially relevant but do not reflect the situational richness of the primary group and its problems. Planners could not collect sufficient detail to reflect the richness and differences which prevail among large numbers of primary groups in an extensive national or regional domain. Complete and detailed information could not be feasibly gathered, and if the data were collected and analyzed, the implications could not be comprehended by central planners or decision makers and encompassed in their plans, policies, and programs.

Yet plans are made and allocations decisions are reached in central locations remote from the primary group and its local situation. The option chosen by systems planners is to develop aggregates and averages in the form of indicators which reflect the situation within reasonable limits. The difficulties and limits of this approach are obvious. The averages reflect no reality but may instead mask critical situational differences. In an attempt to get around this, planners disaggregate by "relevant categories," i.e., by regions and subregions, rural and urban, male and female, and by ethnic groups. There is a limit to this. Planners also group different indicators into patterns of cross-classification or develop multiplicative indicators into clusters or typologies. Again there is the usual room for plus additional errors introduced through the grouping procedures.

In educational planning the problem is exacerbated by the nature of education itself. It may be straightforward to develop indicators to assess activity targets by measuring inputs. It is slightly more difficult to develop output measures to assess attainment of objectives - the measurement of educational output being complicated by the difficulty of observing learning when it occurs, measuring it as a resultant, and developing criteria levels that permit comparison across educational situations. An illustration of this is the difficulty of making inter-country comparisons of educational achievement, as measured, for example, in the International Study of Educational Achievement. Criteria and conditions vary to such an extent that units are simply noncomparable. This is equally a problem within a single country, across regions, or even among institutions.

If outputs are difficult to measure, then assessing the consequences of them, "the outcomes," in terms to be used later, are even more difficult. Yet it is these outcomes which signify attainment of social goals, and indicators should be able to reflect them.

For planners the long trace from Goals to Indicators and some of the complexity of that trace are sketched in Figure 2. First, it is

Figure 2

Problems in Development and Use of Planning Indicators

Goals	Objectives	Objective Functions (Observed and controlled outcomes)	Criterion Measures (Observed and controlled outcomes)	Indicators
a) Irrelevance	a) Ambiguity	a) Multiplicity of outcomes	a) Validity	a) Currency
b) Ambiguity	b) Irrelevance	b) Simplicity required, creating hazards of i) Aggregation ii) Averaging	b) Reliability	b) Applicability
	c) Conflicting interests	c) Uncontrolled or unobserved outcomes	c) Acceptability	c) Purity
			d) Collinearity	

possible to jump from Goals to Indicators, and this, in fact, is generally done; but it is not possible to make this jump and still maintain anything but a pretence at system or rigor. The usual systematic route is from Goals to Objectives to Objective Functions to Criterion Measures to Indicators. The middle steps are often skipped because they are often so discouraging or difficult to carry out. Figure 2 also portrays reality by hoping that there are uncontrolled outcomes which cannot be readily accommodated in an assessment model. Some of these outcomes may be known but uncontrollable, others unknown. Both kinds of outcomes affect the purity of indicators through collinarity, i.e., what may be influencing the variables in the indicators may be some other varialbe with unknown or uncontrolled effects. Because this is always so in reality, the most attractive cop-out is to make the great leaps which characterize so much of social planning rhetoric.

The first problem of Goals is that the goals of the central planners may be different from the goals of primary groups, as has been mentioned. More likely, the goals are ambiguous, perhaps irrelevant, or even conflicting, but so unclear that neighter group can tell.

For this reason goals are usually translated into Objective Statements, which means nothing more here than goal statements worked over to reduce ambiguity. Once the ambiguity is reduced, the effect may be to highlight irrelevance or conflict. Resolution of these problems is not the forte of systems planners but may be within the skills and competencies of social planners, organizational analysts, or social psychologists. If the conflict cannot be reduced and the irrelevance remedied, the process stops and the remaining steps in the systematic exercises are only that - exercise.

There is nothing harmful in exercise, as long as the mathematical Mittys of this world realize that they are not competing in the Olympics when they are jogging around the block. Ratiocination builds sturdy minds for another day, just as the empty rhetoric of fraudulent "social concern" builds sturdy mouths.

Objectives are linked to criterion measures through objective functions, which give rise to some agonizing problems for the analyst and planner. Here the analyst must face the trade-off between the multiplicity of outcomes relevant to any one goal and the need for simplicity in the statement of outcomes. There are also problems of measurement, combinability, and expression of outcomes. First, there may not be any useful single measure of utility of outcomes to reflect the objective and goal; second, different decision makers have different preferences for any particular outcome. Let us assume that a goal is stated: "To provide education to all citizens." One decision maker might prefer equal treatment for everyone; another might put greater value on extra attention to the disadvantaged; another might emphasize the development of top talent. Before an objective function is possible, these preferences must be reconciled into a single utility function - probably one with several twists and bends to roughly accommodate each position.

Clarifying alternative goals and objectives with objective functions has merit, but in reality it must be done by incorporating results into single or simple measures, and this leads to problems of aggregation and averaging, as first discussed. In any case, there are vast uncontrolled and unknown consequences emerging at the same time.

The problem of developing criterion measures of objectives is handled under standard theory and practice of tests and measurement. The objectives must be stated in behavioral terms, and the behavior must be observable. If observable, it is measurable, and the measurement must be valid and reliable. It is valid when it measures what it purports to measure, that is, the test situation is relevant to the objective. It is reliable when it measures consistently through repeated applications, i.e., to different subjects and in different circumstances. Validity and reliability have traditionally been the limit of concern of the test measurement man, but beyond that lies the problem of acceptability. If the test is unacceptable - and this is a mounting problem for objective testing - then it matters not how many demonstrations of validity and reliability are issued by the test man. The answer is, "I just don't accept it as a criterion measure." This rejection may apply either to the measurement procedure and instrument itself or to the incorporation of the results into norm tables for comparison among groups and individuals.

If the procedure can be run through the criterion-measurement stage, then the development of valid indicators has only a few remaining problems. An indicator should be current, but often it is not. No indicator has validity through time and changed circumstances. The indicator also must be applicable, i.e., cannot be applied to different situations and groups without demonstration that it is applicable in such circumstances.

The problem that is never fully resolved for analysts or planners is the problem of Purity. The indicator effects are almost always confounded, he variable influenced by unknown and uncontrolled outcomes that were not controlled and not even observed or known. Collinearity is the great confounder of purity of relationships among variables. For planners, as for preachers, the lack of purity in the world is a terrible thing.

With current, applicable indicators that are pure and based on reliable and valid measures that are relevant to objectives, much can be done. Indicators can be added, subtracted, multiplied, combined in some manner with other indicators for planning, compared across groups and over time, or disaggregated for groups of special interest, e.g., ethnic or sex or age. Objective functions can be set for allocations models and changes in them assessed through simulation and sensitivity analysis. Long-term consequences of plans and policies can be simulated and tested. Input and output relationships can be assessed and expressed in input coefficients which reflect the use of certain proportions of actual and projected resources.

4. A Format for Evaluating Selected Indicators

As the preceding section suggests, planners are stuck with making the best use they can of indicators that are likely to be far from perfect in any particular application. Experts who construct indicators may be aware of the pitfalls and apply them only on the basis of considered judgment. Others, however, rarely have access to the important background information on each criterion that allows for judgment of its validity or practical use.

There is need for a kind of "consumer's report" that can give all participants in a knowledge network a better sense of the rationale and limitations of the criteria by which their efforts are evaluated. In this way criteria can be offered for discussion and adoption by mutual consent rather than imposed in the form of an inalterable blueprint. Broad discussion of indicators can also help enrich planner's vision of the processes that they might be affecting unintentionally or which they might control more effectively if they were conscious of the possibilities for doing so.

Figure 3 illustrates a possible format for evaluating selected indicators. The three indicators shown represent a sample of what would presumably be a larger list of indicators that any particular project would draw upon selectively. The format directs attention to the following considerations:

- Examples of how a particular indicator has been actually used (or suggested for use) in practice.
- Specific measures which might be used to define the indicator operationally. (It is important to distinguish a sense of what the indicator really means from the ways that it is measured, insofar as performance is often biased away from ultimate intentions to satisfy surrogate measures.)
- A rough assessment of the cost of compiling data needed to provide operational measures of the indicator.
- A judgmental estimate of the potential role for outside technical assistant agencies to play in the educational processes and outcomes addressed by the indicator (discussed further in section 5 of this chapter).
- A brief statement of the rationale for the indicator, particularly in regard to its robustness (or validity under a range of field conditions), along with reference to further discussion in published literature.
- Brief consideration of the major limitations in use of the indicator.

Further Explanatory Notes on the Format

- DATA COST refers to on-going use of the criterion rather than the initial investment necessary to establish collection procedures.

  "Low" = virtually costless, or routinely published data.

  "Medium" = modest or variable costs, for example, administrative by-product data on file and only requiring collation; use of unobtrusive measures (Webb, et. al., 1966), or nonquantified observations obtained through site visits.

Figure 3a

CRITERION: Project Deisgn Contingencies Identified in the Field	DATA COST			TECH. ASSIST.				EXAMPLE OF USE
	Low	Med.	High	Trad.	New	Dep.	Ltd.	
Possibly measured by:								
(a) Knowledge and pland make explicit allowance for contingencies.	X					X		UNESCO source books for science teaching in LDC's.
(b) Homely problem definitions and solutions are insisted upon.	X						X	ACPO use of radio "soap operas" to convey developmental material. Self-help architecture solves problems with vernacular forms and unorthodox materials (Turner, 1972; Fathy, 1973).
(c) Contract employees spend at least half of their time in the field.		X			X			Regional officers in Peace Corps administration.

RATIONALE

Even well-conceived and executed projects founder when they neglect to deal with the "micro-climates" of local donditions, values, motivations, constraints, and opportunities (see Milhaly, 1965; Allen, 1974; and Wade, 1974). In addition, the buildup of anomalies based on strictly local experiences can become the raw material from which better strategies can be formulated (Kuhn, 1972). Thus, by monitoring local conditions during definition, design, and implementation stages, both the short-run and long-run effectiveness of projects can be improved.

LIMITATIONS

Identifying design contingencies in the field is not a substitute for careful advance planning based on experience elsewhere. Perceptions in the field may be as heavily colored by prevailing methods and preconceptions just as they are in LDC and MDC development agencies.

Figure 3b

CRITERION: Use of Multiple Media in Knowledge Transfer	DATA COST			TECH. ASSIST.				EXAMPLE OF USE
	Low	Med.	High	Trad.	New	Dep.	Ltd.	
Possibly measured by:								
(a) Allocation of knowledge-transfer components of budget to multiple media.	X			X				APCO: Newspapers, books, radio, site visits.
(b) Retrospective studies of how knowledge was transferred in individual projects.			X	X				Follow-up research on dissemination of innovative program from the U.S. Office of Education (Berman and McLaughlin, 1974; Cohen and Garet, 1975).
(c) Correspondence between media to be used and media known to reach target population.		X		X				Presentation of educational materials in comic book format to persons confident in reading this medium (development campaign literature, political materials in many countries).

RATIONALE

Target groups for knowledge transfer in LDC's may have access to media in diverse and poorly known ways. Use of multiple media can be a cost-effective strategy for knowledge transfer in that (1) better coverage of a target population with differing habits of media use can be achieved and (2) if the media-use habits of a target population are known poorly or not at all, the chances of achieving significant transfer of knowledge are increased. In addition, different kinds of messages may require different media because of (1) the nature of the media, (for example detailed instruction should not be transferred by radio because they cannot be preserved by the target population for future reference); and (2) habitual use of channels to carry particular kinds of messages may make them poorly suited to other kinds of messages. For example, messages sent through visiting officials to schools by a ministry of education may be largely authoritarian requests for compliance with centrally created guidelines. If these channels were subsequently used for conveying information about nonauthoritarian teaching methods, such messages would probably either be attenuated before reaching the schools or lack credibility to the schools.

LIMITATIONS

Multiple use of media is probably superfluous in some situations, such as in formal or informal organizations of professionals, within LDC universities, and in other instances where the target population is small, known to one another, and highly motivated to utilize relevant information.

Figure 3c

CRITERION: Communities Become More Self-Sufficient	DATA COST			TECH. ASSIST.				EXAMPLE OF USE
	Low	Med.	High	Trad.	New	Dep.	Ltd.	
Possibly measured by:								
(a) Ability of community to create and store economic surplus for its collective use.		X	X				X	Community Development Corporations (Hampden-Turner, 1975; Pitts, 1975, Tuskegee Institute, 1974) Implementation of credit unions in the Comilla project, East Pakistan (Raper, 1970).
(b) Imports reduced through introduction of appropriate technologies.		X				X		Reinforcement of existing local economic activity (Dickson, 1975).
(c) Reduction in rural-urban migration.	X			X				"Back to the Village" national campaign in Nepal to involve educated youth in village problems. Similar smaller-scale efforts in Jamaica.

RATIONALE

Development strategies involving the singleminded pursuit of economic growth have historically resulted in considerable segments of the population becoming worse off. The penetration of rural markets by manufactured goods often brings an end to local cottage production which might profitably have been perserved through appropriate or intermediate technologies. The push of unemployment on the land or the pull of urban amenities often drains the countryside of youth and talent at the very time when the viability of the countryside depends on these qualities to compete with the cities. In an environment in which industrialization is unmodified, surpluses tend to gather in private hands and in the cities, thus endangering the ability of rural communities to respond to collective crises or opportunities. Since rural welfare is not necessarily served well by economic growth and industrialization, it must be considered as an individual dimension of development and perhaps as a constraint on economic growth in the conventional sense.

LIMITATIONS

Self-reliance as a development strategy is only viable on a large scale if it is part of a strong national policy with ideological and economic reorientation away from traditional strategies that favor the "modern" industrial and commercial sectors.

"High" = expensive, ad hoc research.

- TECH. ASSIST. refers to the likely usefulness of outside technical assistance agencies to affect outcomes measured by the criterion.

  "Traditional" - standard technical assistance practices.

  "New" = unorthodox roles, but the only major constraint is agency willingness to shift objectives and staff incentives.

  "Dependent" = role dependent on initiatives by host country organizations.

  "Limited" = a role chiefly confined to specialized training, evaluation, and design of components but not strategic planning.

5. Knowledge Base for Determining Technical Assistance Requirements

Another requirement of knowledge networks is the determination of an appropriate set of network participants based on an assessment of needs for the defined target groups. The United States Agency for International Development is presently concerned with this question because, although it has large enough resources to warrant overall review of a country's entire educational sector, at the same time AID faces pressures from Congress to use these funds sparingly, as a complement to other agencies already on the scene. The nine Question Assessment Schema shown in Figure 4 is used by AID, and it appears to serve as an intelligent basis for determining technical assistance requirements. As such, it shows how knowledge networks might best be plugged into the gaps unfilled by other forms of technical assistance of self-help solutions.

Each of the nine questions in the schema leads to a list of finer-grain information requirements, which run for several pages. Figure 4 simply describes the questions in general outline.

Figure 4

Nine Question Assessment Schema for Determining Technical Assistance Requirements

For each question, indicators for the Priority Group are compared against those for the population as a whole. Target populations may also be disaggregated by age, sex, ethnicity, and physical location (urban/rural; isolated/accessible; concentrated/dispersed). Indicators should refer to levels and changes over time. Program coverage should refer to (a) accessibility to target groups, (b) outputs, and (c) outcomes.

Questions 1 - 3 refer to specification of needs; questions 4 - 6 to gaps, constraints on achieving targets and programs to overcome constraints; questions 7 - 9 to deployments of agencies needed to fill the gaps.

1. IDENTIFY PRIORITY GROUPS AND PROBLEMS
   Economic: production/employment; income/earnings; labor market characteristics; integration/marginality of primary group.
   Social: cohesion/organization; security; dependence; participation.
   Health: nutrition; morbidity; mortality; housing, space, water; maternal and child health; environmental health.
   Cultural/Political: literacy; language; representation; capacity for self-reliance.

2. NATIONAL GOALS
   General Development: population/demographic; health/quality of life; economic (growth); social (distribution); political (participation).
   Education Sector: Response to demographic/social trends (entry opportunity; continuation opportunity). Response to economic demand (basic training; middle- and higher-level training; science and technology policy).

3. LEARNING NEEDS OF PRIORITY GROUP
   Basic Education (general literacy and numeracy; basic health, productive and distributive skills; social development).
   Continuation Education
   Other primary group needs (land tenure, credit, marketing assistance; roads; irrigation; power grid).

4. DELIVERY ON LEARNING NEEDS: LEARNING SYSTEMS
   Non-formal (institutions/programs; delivery format, efficiency, coverage; resources)
   Formal (systems structure; delivery format, efficiency, coverage; resources).

(Figure 4, continued)

5. GAPS IN COVERAGE
   Gaps (revealed by comparing data from questions 3 and 4 above).
   Learning system constraints on meeting needs of primary group.
   National constraints on meeting needs.

6. FEASIBLE PROGRAM RESPONSE
   Formal System objectives and activities to overcome gaps.
   Non-formal System objectives and activities.
   Social Structure Policies (actions affecting social/economic/spatial relationships to reduce or modify demands on the educational system).

7. GOVERNMENT RESPONSE
   Proposed and actual policies corresponding to question 6.

8. OTHER AGENCIES
   Internal or external programs to take up where government programs leave off (filling the gap between questions 7 and 6).

9. RESIDUAL ASSISTANCE NEEDED
   Proposed, existing and past aid, correspondence to primary group needs (question 6) not met by government programs (question 7) or other agencies (question 8).

Overview of the "Nine Questions"

1) Indicate who comprise the priority group (P.G.) - for example the "poorest 20 percent" - in the host country and the characteristics of their deprivation and poverty that constrain their effective participation in the development process.

2) Explain how these factors link up both to overall development and to sectoral problems, goals, constraints, and priorities.

3) Describe the minimum learning needs (knowledge, skills, and attitudes) of major groups among the poorest 20 percent necessary for their effective contribution to and participation in the development process. Analysis may focus on a subgroup of the poorest 20 percent in a given country which has been selected for primary attention. In order to help decide what priority group(s) on which to focus, it is important to analyze the characteristics associated with the deprivation - and related development needs - of the poorest 20 percent as a whole, including subgroups such as women, which may tend to get excluded from participation in the benefits and task of development. Projects which affect only a limited part of the poorest 20 percent will be evaluated in part by how replicable (and how likely to be replicated) they appear to be.

4) Provide a descriptive profile of the existing learning systems (formal and nonformal) relevant to the needs being addressed and the group needs being covered.

   a) Whom do they reach?

   b) How efficient are they?

   c) How relevant are they?

5) Describe the coverage of the systems on the learning needs specified in No. 3 above.

6) In terms of identified gaps, explain the constraints to be overcome in meeting the learning needs, the alternatives considered, and priorities assigned to problems and solutions.

7) Assess how well the country's existing plans and priorities for action correspond to priority learning activities, as specified in No. 6 above, and what changes seem necessary/desirable to address these problems.

8) Describe the activities of other donor agencies and how well they address the "gap" needs specified above.

9) Describe and assess the resultant strategy for overcoming remaining gaps in the learning needs of the poorest 20 percent. Explain how this strategy relates to the activities of the host country's efforts and other donor programs in terms of gaps and priorities noted above.

CHAPTER III

FACTORS AFFECTING THE CONNECTION BETWEEN KNOWLEDGE PRODUCERS AND USERS

1. Choice of a Network Typology

A major purpose of this study has been to identify characteristics of the users and producers of educational planning knowledge. Toward this end:

(a) the study identified four general groups of actors: universities, sponsors, clients and primary groups (see Definitions, Chapter I);

(b) an examination was made of various geographical levels where users and producers are likely to be found: international, national, regional, district, and local. Each represents a locus where educational planning activities are going on, hence a potential element of a network.

(c) network systems were also classified according to typical clusters of actors: inter-university networks; agency-sponsor networks; MDC-LDC networks; intra-LDC networks. Presumably each cluster presents a distinct set of purposes and distinct lessons of experience.

After much searching, however, none of these ways of categorizing users and producers seemed to tell much about why knowledge transfers were successful in some cases, and failed in others. Nor did they differentiate between the nature of users and senders. For example, universities were found functioning both as senders and users; and it also became clear that primary groups, far from being passive recipients of technical assistance, were producing a certain amount of knowledge on their own. Nor did any of the various classification schemes help predict very well who were the successful users or producers of knowledge. Most producers have been standing with open doors and few customers; most potential users call out in vain for the right producers to answer their specific needs. What is the source of all this misconnection? And what makes the exceptional cases of good connections different?

We surmise that the failure to link users and producers is not to be found in the gross characteristics of actors, clusters of actors or geographical sites. Networkers categorized in these ways have names and addresses that can be linked into a network easily enough, once congruent purposes are identified. But there precisely is the problem: knowledge producers and users have basically different purposes for being part of a knowledge network. To make a heuristic oversimplification, the user usually sees himself as part of a Bottom Up Network; the producer sees himself in a Top Down Network.

A Bottom Up Network operates on the philosophy of "knowledge pull." First comes a sense of felt need, then a sense that knowledge will help meet the need, and finally a recognition that the knowledge is cheaper and better to get from someone else than it is to produce locally. Then it is a simple matter of going to the yellow pages. In contrast, a Top Down Network operates on the basis of "knowledge push." The incentives for pushing are different than for pulling; they do not stem from a sense of special need in a community, but from other, less intrinsic functions - fees, altruism, bureaucratic functions.

But the gap lies not just in the disparity of rewards and incentives. It carries over to different indicators of success, and beyond that to differences in development philosophy. Top Down and Bottom Up approaches also imply different organizational structures and different linkages across organizations that participate in the network. Another important connection that has to be made between knowledge producers and users is perception of knowledge content, for example, in the relative emphasis put on codified or contextual forms of knowledge (see Chapter II).

All this is still oversimplification, but the idea of Top Down/ Bottom Up disparities seems worth pursuing, if only as a way of pointing to a set of residual variables which affect the successful link-up between knowledge producers and consumers, or alternatively, explain where misconnections can occur. For ease of reference, these variables are summarized in Figure 5.

The ideal types represented in this dichotomy are largely heuristic. Actual users and producers of knowledge will typically be located somewhere along the spectrum represented by each of the variables. If knowledge producers are alike with respect to each variable, then the job of networking is that much easier. In each respect that they differ, however, steps have to be taken to recognize and reconcile the gaps. The fact that they differ is not always a liability - on the contrary, it might make for the most fruitful form of knowledge exchange. But without both a recognition of differences and a commitment to building the necessary bridges of understanding, the linkages will never be made. Either that, or the knowledge transmitted will tend to be superficial, distorted, misued, or ignored when it comes to implementation.

The focus of this chapter on Top Down/Bottom Up differences should not let us forget or minimize the importance of other, more widely recognized variables that determine effective links between knowledge producers

Figure 5

Descriptive Variables Characterizing Knowledge Networks

Variable	Top Down Networks	Bottom Up Networks
1. Structure	Focuses on division of labor within the network. Concentration on the institutional arrangements to coordinate the effort.	Focuses on the organization of the community to develop its own resources.
2. Knowledge Content	Deals primarily in codified knowledge which is linked to a scientific paradigm.	Deals primarily in contextual knowledge. Sends out knowledge embodies in specific experiences.
3. Linkages	Supply of knowledge organizes demand. Links begin with the knowledge provider and build toward the user.	Demand organizes supply. Links begin with recognition of needs, and seek access to a variety of knowledge resources.
	Long-term linkages to identified users is encouraged.	Short-term links sought; dependency a salient issue.
	Knowledge brokers are oriented to identification of knowledge users.	Knowledge brokers are oriented to identification of knowledge sources.
4. Reward	Rewards are for performance in communicating codified knowledge, stressing objective realities.	Rewards performance in communicating contextual knowledge.
5. Indicators	Requires quantitative estimates of impacts where possible. Emphasis on allocation of scarce resources.	Ad hoc and subjective measures of impact are acceptable. Emphasis on mobilization of undeveloped resources.
6. Development Philosophy	Problems among primary groups are defined for them by "experts," who then supply solutions.	Primary groups learn to define their own problems, and to reach out for resources for solving them.
		Primary groups are seen as having great amounts of unrecognized knowledge.

and users. Physical distances and cultural differences are indeed important. The creation of a knowledge resource pool is vital. Establishment of knowledge directories to make these resources more accessible to potential users is a priority need. And there is no substitute for shared understanding of substantive educational problems and appropriate functions of educational planning (see Chapter II). To repeat, the Top Down/Bottom Up label applies to a set of residual variables that also govern an effective meeting of minds among knowledge users and producers.

The following section (2) describes the general differences between Top Down and Bottom Up networks. Section 3 identifies more specific differences, in the form of variables which describe whether an organization is congruent or incongruent with the purposes and structure of other participants in any given network. Section 4 illustrates the differences by means of reference to six case studies of networks. These include:

Top Down Strategies:	(a) ECIEL, (b) AID-sponsored universities
Bottom Up Strategies:	(c) Community Service Vouchers, (d) IAF;
Mixed Strategies:	(e) APCO, (f) Ahmednagar College.

2. General Description of the Top Down and Bottom Up Approaches

Neither of these approaches is inherently superior, but they have different purposes, and different strengths and weaknesses. A good deal of effort that goes into the improvement of networks amounts to a process of one approach rediscovering what the other already knows.

The Top Down (TD) and Bottom Up (BU) viewpoints have important specialized functions that might be badly compromised by their incorporation into a homogenized, all-purpose network approach. The networking problem might better be seen as one of spanning different viewpoints, but not trying to create new institutions that could hope to successfully take over the functions of each approach.

Top Down Networks. The dominant characteristic of a TD network is its emphasis, already noted, on "knowledge push." This may involve preparations at the grass roots level in the LDC, for example in preparing and motivating audiences, opening channels and disseminating back-up materials. However, the fact that a message is predetermined by people or policies external to the target group makes it a Top Down approach. The client in this networking strategy is frequently a national or regional policy maker who in turn acts on primary groups.

TD networks operate primarily in the language of the network's originator. Codified knowledge in the form of models and methodologies commonly make up the substance of the knowledge transferred via these networks. Similarly, such networks require codified knowledge for input, such as census data, or documentation of goals, needs resources and program options.

The TD network is most familiar to the developed world, because it is inspired in part by the objective of utilizing MDC knowledge resources in LDC settings. Frequently, however, the linkages into LDCs are less well developed than the MDC resource bases themselves, and effective use of the resource does not occur. Moreover, it is clear that LDCs can also be sources of knowledge push, as senders of data, images of problems, model programs and validations of solutions.

The strengths of TD networks also constitute their weaknesses. For instance, TD networks have a tendency toward natural selection of the better-off LDCs, which have a better absorptive capacity for knowledge being pushed. This is illustrated by the Latin American network ECIEL, which appears as a case study later in this chapter. ECIEL links economic researchers together and provides them with such services as access to colleagues, data, advice on methodology, and seminars to discuss topics of common interest. Nevertheless, ECIEL is not known either for addressing the needs of the poorest countries in Latin America, nor for addressing the needs of poor communities within the LDCs it reaches.

Technical assistance deriving from TD knowledge push can contribute to a circular process of creating additional needs for technical assistance. "Planned change" can become an end in itself, an autonomous force acting without response to the recipient's own special context. The definitions of modernization and development used by Rogers and Shoemaker reflect this TD process almost in caricature.

> Modernization is defined as the process by which individuals change from traditional way of life to a more complex technologically advanced, rapidly changing style of life.
> (Rogers and Shoemaker, 1971, p. 10, footnote.)

> Development is a type of social change in which new ideas are introduced into a social system in order to produce higher per capita incomes and levels of living through more modern production methods and improved social organization. Development is modernization at the social system level.
> (*Ibid.*, p. 11, footnote.)

As some aspects of the traditional life style in some communities are transformed, well-recognized tensions occur between the modern and traditional practices within one community and between affected and unaffected communities. Additional technical assistance is then required to deal with the newly created contradictions. Sometimes a TD perspective can be described as "superior" in its vision of what is at stake in development; sometimes it can appear grossly insensitive.

Bottom Up Networks. If there is one variable differentiating the TD and BU approaches around which the others tend to revolve, it may be the factor of development philosophy (see Figure 5). As an example of a BU approach, one can take Philip Coombs and Manzoor Ahmed's description of cooperative self-help development.

> (It) starts with the assumption that the complex process of rural transformation must begin with changes in the rural people themselves - in their attitudes toward change, in their aspirations for improvement, and above all in their perceptions of themselves and of their own inherent power, individually and collectively to better their condition. The chief motive power for rural development, this view holds, must come from within, though once the people are ready to move, outside help of various kinds in response to their expressed needs may be essential to sustain progress. (Coombs and Ahmed, 1974.)

The contrasts between this and the earlier quotes from Rogers and Shoemaker are striking and self-explanatory. Among the cases examined, the BU approaches appear somewhat more successful in addressing the needs of poor communities than TD strategies, although this relationship deserves a more critical examination.

Problems also arise with Bottom Up networking, alongside its strengths. Solutions, when they are found, are not generalizable. Bottom Up networking may strain a poor community's own outreach capacity. Historically, BU approaches have failed to mobilize resources from outside the local system, sometimes because of an intentional bias toward self-reliance, which puts intrinsic limits on networking outreach.

To summarize the contrast between the two network strategies: TD networks involve "knowledge push," which consists of finding problems for which knowledge producers have solutions. BU networks involve "knowledge pull," which is based on problems in search of solutions. In TD networks, supply organizes demand, while in the BU approach, demand can be assisted to organize supply, through improved access to knowledge resources.

3. Network Variables and Network Strategies

This section provides an explanation of the six variables which differentiate the TD and BU networks, elaborating on the briefer descriptions shown in Figure 5.

(1) Structure. The structural emphasis of Top Down networks is on institutional forms and functional categories. In a university, for example, these categories might be divided according to academic disciplines or centers of specialized knowledge. In a ministry of education, educational problems may be compartmentalized into functional bureaus. Sponsoring agencies may define their business as problem-solving within circumscribed sectors, without much attention to cross-sectoral linkages - for example, relations between nutrition and education.

Bottom Up networks crystalize around problem-solving processes within poor communities. In this approach institutional forms get much less attention. Institutional linkages are those which can contribute to the sensing and articulation of a problem, diagnosis and formulation of problem-solving needs, identification and search for resources, retrieval of potentially feasible solutions and pertinent ideas, and adaptation of retrieved knowledge into problem context. In this process, however, the marshalling of internal resources is at least as important as external ones. Structures must be geared not only to the satisfaction of particular needs but also the evolution of new internal capacities to solve future problems.

(2) Knowledge Content. Top Down networks deal in a language best described as rational or codified knowledge. Codified knowledge is addressed to recognized problems or ways of treating problems. It is produced through institutional bases and is therefore expressed through data,

algorithms, and language meaningfully shared because of a shared context. Theories and models, analytical procedures and mathematical analysis play an important part (see Chapter II).

Bottom Up networks are characterized by contextual knowledge. Contextual knowledge applies to those situations where the conditions for codified knowledge do not readily apply - specifically, where problems or solutions are not well defined or where incongruent world views are juxtaposed in a knowledge network. Contextual knowledge reflects the intact quality of social experience and must be transmitted through the "action" significance of knowledge. It must therefore denote or suggest the congruence of information with felt need, personality, historical circumstance, moral commitment, pent up tensions, or resonance with personal experience (see Chapter II).

(3) Linkages. In the case of TD linkages, the supplier of knowledge takes the major initiative in organizing contacts with knowledge recipients and preparing clients to use information resources. International donors, for example, often train recipients in the preparation of grant and loan applications; scholarships are provided to key LDC personnel for advanced study in MDCs, for them to carry back home the expertise needed to draw on MDC knowledge resources in future; visiting experts from MDC universities sometimes make it a policy to make intermediary stops in other countries to cultivate future clients; ministries of education sponsor courses for provincial officials to make better use of materials and information provided from the cpaital.

In the case of BU linkages, those in need of knowledge take the initiative in organizing and controlling the supply. Instead of long-term contracts with foreign universities, host countries seek other channels for calling on individual experts of their own choosing. Instead of pure consulting arrangements, they put more emphasis on the simultaneous training of counterparts. Instead of long-term studies for LDC personnel in MDC universities, shorter-term study tours are sought in special programs such as those established through the World Bank, IDF, and AID. The dangers of dependency are more constantly visible.

BU and TD networks place different demands on the role of "knowledge brokers." TD brokers focus on the identity of potential clients. Thus, universities establish libraries in area studies and sometimes keep tabs on foreign alumni; UNESCO and World Bank researchers compile information of LDC countries that might need assistance; AID and the Ford Foundation prepare country background papers. In contrast, BU brokers need information about suppliers. They need contacts in professional associations that can provide confidential recommendations on the quality of foreign advisors (e.g., MUCIA, AACTE); rosters of institutions carrying out work in a particular specialty; or compilations of evaluations on selected categories of demonstration programs (see Coombs and Ahmed, 1974). Some BU knowledge brokers are located close to the primary groups being served, in order to tap local knowledge resources. Organizations that operate in this style are often motivated by an ideological commitment to counteract the image of peasants as ignorant and passive recipients of technical assistance. Some development agencies working closely with poor and rural communities are quick to acknowledge the inherent shrewdness of local leaders, their wealth of practical experience, inventiveness, and capacity for taking initiative. Anthropologists and political scientists studying marginal populations have made similar observations; but the most convincing reports are those of indigenous organizations working directly with poor people on a long-term basis - organizations like ACPO in Columbia, the Tuskegee Institute in Alabama, and the Rural Development Academy at Comilla, East Pakistan, the latter modeled after the Land-Grant college idea in the United States. Bottom Up networks of this sort usually generate knowledge that can be measured in terms of tangible results: crop improvements, cooperatives established, roads built, credit secured. In contrast, Top Down networks tend to measure their results more in terms of intermediary products, in the form of publications and reports, meetings held, people trained. TD activities are imbued with high-level expertise - researchers, administrators, trainers, professionals in media, and international travelers with high-level contacts in sponsoring agencies. Their work and their direct products, however, are farther from the scene where primary groups face their day-to-day problems, and farther from the stages of program implementation and assessment.

(4) Rewards. Why people "push" knowledge in a TD network is a useful question to ask. Reasons may range from altruism to commercial motives. Whatever they are, the rewards are not likely to be as intrinsic to the nature of the problem addressed as they are in the case of knowledge "pull" from the Bottom Up. If a teacher needs information on how to obtain a new blackboard, the reason is usually obvious. When a foreign advisor comes around dispensing advice, recipients might well ask what the motivations are, not only for him but for the organization that sent him, and the sponsor, and the sponsor's own constituency.

Rewards in a Top Down network may be structured around completion of a project within budget, recognition by colleagues, personal satisfaction from positive client's feedback, genuine altruism, the prospect of having someone to work for again in the future, or the chance to make contributions to knowledge and advance the state of the art. If the advisor comes from a university, he is faced with a reward environment which judges his work mainly by its contribution to teaching and published research, and he may also be rewarded for bringing in overhead support funds. It is not clear that these will make him insensitive to client needs, but they are at least different from the incentives found in a Bottom Up, "knowledge-pull" situation.

(5) Indicators. Top Down networks require explicit indicators of network performance, in quantitative form wherever possible. First, the rational systematic planning tradition requires identifiable targets. Second, knowledge providers in a TD network must justify their involvement explicitly, in part to satisfy sponsors and in part to satisfy the client that the curious reward system of a "knowledge pusher" (just discussed) will not comprise his performance from the standpoint of the client's own expectations.

From a Top Down perspective, the indicators focus on aspects of a process that can be controlled: one wants to know whether the surgical operation was a success in its own terms. From the perspective of Bottom Up, it is more a matter of whether the patient lived or died. Or it may be a matter of whether the patient simply "feels better," in ways that cannot be well measured. Bottom Up networks can get away with indicators that are ad hoc and subjective. Comparative standards of improvement are not as stringent a requirement in a BU network simply because improvements are directly registered by those who initiate and control activities at the local level. Problems arise, of course, when others wish to learn from BU networks about the ingredients of "success."

(6) Development Philosophy. Top Down networks consider development problems in the terms of reference shared by outside experts observing an LDC social system. Primary groups are assumed to be incapable of self-mobilization, and lacking resources to buy their way into the productive mainstream of development. Progress is synonomous with modernization, and this involves introducing a faster rate of change, usually through a more intensive use of technology. Solutions to development problems are devised elsewhere and applied to the needy social system. Aggregate economic objectives are frequently the "bottom line," i.e., the final expression of what is at stake in development.

Bottom Up networks deal with a concept of "social development" which is not consistently defined among its various advocates, but it covers such areas as the following:

- greater distributional justice, including the development and reinvestment of economic surpluses within poor communities;
- application of "appropriate" or "intermediary" technologies, including energy-, capital-, and resource-conserving, labor-intensive methods;
- self-reliance, particularly in terms of local capability for policy evaluations and organizations for social action;
- restructuring of work roles to provide for psychic well-being and personal growth as well as economic production; attention to work rewards apart from monetary remuneration alone; and enhancement of other social incentives that transcene pure self--interest as an objective;
- de-emphasis of high consumption as a form of status.

The remainder of this chapter will describe the contradictions and complementarities between Top Down and Bottom Up networks by examining six case studies. Two of these represent TD networks (ECIEL and AID-sponsored universities); two represent BU networks (the Community Service Voucher Program and the Inter-American Foundation); and two represent Mixed approaches, which we find to be perhaps the most attractive model for an effective knowledge network (Accion Cultural Popular in Colombia and Ahmednagar College in India).

4. Case Studies

(A) ECIEL

ECIEL is the Spanish acronym for Joint Studies on Latin American Economic Integration (Estudios Conjuntos sobre Integracion Economica Latinoamericana). The organization grew out of collaborative efforts by several Latin American economic research organizations which began in 1963. The proximate cause of this effort was a wave of interest in economic integration of Latin American countries, and ECIEL took on the role of an informal advocate of this policy, especially to national intellectual, political, and economic elites. After the first meeting in Rio de Janeiro, the Brookings Institute offered to sponsor this collaborative effort on a more permanent basis, a role in which Brookings has remained until the present.

In a sense Brookings and the participating Latin American institutions have had different, although complementary goals. Brookings has seemed primarily concerned with the quality of research in the light of traditional academic standards, while for the other participants the problem was how to benefit from the pooling of resources and knowledge without becoming embroiled in ideological disputes. Brookings has emphasized the collection of data that can later be compared with other ECIEL data, but it has also recognized the limits of forcing each country's analysis into the same mold, given inter-country differences.

For the Latin American members, although the emphasis has shifted somewhat from regional economic integration to comparative studies, the original emphasis on collaboration and sharing of resources has proven very sound. The original group of three Latin American institutions has by now expanded to twenty-one institutions, including several from the United States. In order to accommodate the diversity of ideologies between member institutions, ECIEL adopted a strategy of (1) undertaking empirical research rather than political interpretation; (2) providing a common framework for collection of comparable data, with flexibility for departures in light of each country's circumstances; and (3) focusing on a central issue - the costs of deviating from economic optima. Besides turning out reports and data, ECIEL has also produced a number of leading Latin American economists, many of whom have moved into important policy-making roles.

Much of ECIEL's work takes place at twice-yearly seminars hosted by the various member institutions in turn. At the seminars, participants meet and converse with potential collaborators, select and design studies, seek each other's advice on methodological and procedural problems, and review the progress of ongoing work. In addition to members, the seminars are also attended by invited observers from various national and international organizations.

Descriptive Varialbes

1. Structure. ECIEL gives major attention to the division of labor and other forms of specialization among its members, and fosters institutional arrangements for the coordination of these specializations. There

is no systematic cultivation of potential users, except for research participants who may occupy present or future positions in policy making.

2. Knowledge Content. ECIEL emphasizes the production and dissemination of codified knowledge minaly via books and reports. This knowledge is very heavily linked to economic paradigms. On the other hand, contextual knowledge dealing with the management of research is exchanged among ECIEL members.

3. Linkages. ECIEL is clearly concerned with building links among universities and other bases of economic expertise, as opposed to building "knowledge pull" linkages up from poor communities and other problem sites. Some "alumni" of ECIEL research programs are in policy positions that may draw on ECIEL-generated knowledge.

4. Rewards. Rewards in ECIEL are for communicating codified knowledge, especially in academically recognized publications. Although contextual knowledge about research and other topics may be communicated witin ECIEL, it does not appear to be formally rewarded.

5. Indicators. Because ECIEL deals with links between economists, it is clearly concerned with standard quantitative indicators, and with the allocation of scarce resources, as opposed to seeking ad hoc indicators and stressing the identification and mobilization of new resources. Economics is a science primarily concerned with known resources.

6. Development Philosophy. ECIEL's forte is supplying non-experts with problem definitions and solutions created by experts. Implicit in this is the view that the people who live most closely to the problems of development lack the intellectual tools or the institutional capacities to do this for themselves.

(B) A.I.D.-SPONSORED UNIVERSITIES

Since 1941, the United States Agency for International Development has supported training in U.S. universities and colleges for over 165,000 persons from developing nations (Hannum, 1975, p. 1). In addition to training, AID has made large contributions to research and technical assistance efforts by American universities focused on problems of LDCs. In recent years, AID has supported universities not only in connection with particular projects, but through funds and other arrangements designed to build up a sustained capacity to respond to LDC needs in several broad areas. One of these areas is educational planning. The major institutions involved are Stanford University and Florida State University in educational technology, the University of California at Berkeley in education costs and finance, and Michigan State University and the University of Massachusetts in non-formal education. The AID-sponsored universities are mainly working in the Top Down tradition, as seen in the following review of descriptive variables.

Descriptive Variables

1. Structure. The division of labor within AID-sponsored universities appears to escape the usual fragmentation into academic disciplines. In some cases faculty have a shared exposure to project sites overseas. Michigan State, for example, was involved in the Comilla project; Florida State is developing entree to ACPO as described in a later case study. In some instances, faculty share a concern for particular issues within their broader mandate. The theme of equity runs through much of the work at Berkeley.

Nevertheless, the AID-sponsored universities operate within traditional academic structures, whose decisive influence on knowledge utilization strategies is not always very apparent, unless university faculty self-consciously undertake a Bottom Up approach to development projects. The Top Down bias of a typical university is vailed behind assertions of academic freedom. Yet, as one faculty member put it, academic freedom can mean freedom to be academic and not much freedom for anything else. This is best revealed by looking at universities which tried to break out of the Top Down mold. (See later case studies in this chapter, particularly those on the Community Service Voucher program at Northwestern University and on Ahmednagar College, India.) Judging by the other case studies, the choice that an organization makes between linking up with a Top Down or Bottom Up network is dominated by the variable of Development Philosophy. Because a university has no official philosophy, however (academic freedom again), it exerts its unstated philosophy through its structure. Structures, then, decisively affect the university's knowledge base, reward system and characteristic style of linkage with knowledge networks.

2. Knowledge Content. Universities are the archetypical purveyers of codified knowledge, but contextual elements usually enter in greater proportion as activity shifts from teaching and research to consulting in the field. Complaints are common among faculty that the investment of energy in learning contextual knowledge is not rewarded by the university, because it does not lend itself to publication. At best it increases the chances of being invited back for another visit. One observer of certain foreign consultants to Jamaica disgustedly pointed out that they were "reading us advice out of their lecture notes." Much depends on how each individual foreign advisor balances university incentives against other

more intangible rewards of being useful to an overseas client. Again, this points to a strategy of giving the client greater control over the choice of individuals sent to advise them. Along with this, first trips by visiting experts might be kept very short for the purpose of testing mutual sensibilities.

3. Linkages. Here it is simply worth noting the major categories of linkage tactics that are addressed later in Chapter VII: (a) paper networks and information banks such as reports, letters, and the ERIC system; (b) more active knowledge brokers who compile and evaluate information for selective purposes, examples being professional consortia and Britain's Inter-University Council for higher Education Overseas; (c) face-to-face encounters such as found at the Bellagio Conference Center; (d) techniques for collaboration on specific projects, for example, the Jamaican model of education sector assessment and follow-up, and (e) action research.

4. Reward. The problem of disparity between the reward system of a university and the needs of overseas clients has already been cited in several contexts. The point can be summarized in the following excerpt from a Peace Corps report:

> . . . the university is an institution that is . . . uncommitted to social and political action, interested in research and publication, dedicated to long-term specialization . . . in many ways the antithesis of . . . the Peace Corps. The system of rewards and promotion places a premium on care and thoroughness in scholarly production, not on administrative accommodation or social service. If the university has accustomed itself to outside contract research, it has done so in large part on its own terms: those of scholarly significance, reasonable deadlines, and freedom to publish. (Peace Corps, 1969, pp. 26-27.)

It serves little to dwell on this gloomy side of a familiar reality.

It is like the weather, much talked about but little affected by the discussion. One is dealing here with a vast institutional structure embedded in a long tradition of higher education that protects its members from having to be accountable to anything but the truth. For good reason, the university values the advancement of knowledge, and it rewards publication activities accordingly. If helping clients results in a gain of collective publishable knowledge, this does get rewarded; but if service is rendered without the university learning anything new and generalizable, a corresponding opportunity cost is imposed on engagement in these services.

5. Indicators. For a university, indicators are closely tied in with the reward system. In scanning the annual reports of AID-assisted universities, one reads, for example, that Florida State University anticipates for the next year the publication of four to six research reports, eight monographs, eight to ten Ph.D. dissertations, and eight to ten journal articles. Similarly, UCLA notes that during the first three years of its program, ten books or monographs and fifteen papers were published. (About half the papers were originally published or translated into Spanish.)

The quantity of output is measurable, but not the quality, nor the readership, nor the impact on readers. For these reasons, networking within this strategy remains somewhat an article of faith. Its demonstrable utility relates more to other producers of knowledge than to consumers.

However, publications have a plausible impact on general awareness among professionals regarding current conceptual developments. It may also affect on-going field experience via published case studies. Champion Ward, who has followed such things for many years in the Ford Foundation, believes that many effects of the university come about on the "second bounce," remote from the place where the first impact was noted. Cohen and Garet (1975) reached similar conclusions based on a systematic follow-up of programs sponsored by the U.S. federal government. They found that the most important products of research tend to have their effect, not directly on policy decisions, but in creating "clients of belief" which have a broader and more profound effect on policy formation. There are no good indicators that can be brought to bear on this; in fact, the kind of effects to which Cohen and Garet allude are of a kind which change people's minds about what we should be looking for in sponsoring social programs. This implies that the university programs, if highly successful, will outgrow the indicators of success they started off with.

6. Development Philosophy. This may be the key to how far sponsors, universities, and clients are willing to push toward change in the other variables affecting the structure of knowledge networks. In both of the subsequent case studies describing university-fostered Bottom Up networks, philosophical struggle was an important prelude to breaking away from the more established Top Down tradition in search of a stronger outreach to primary groups.

If the "knowledge pull" approach seems a good way of getting knowledge down to where it does some good, it makes sense for an agency like AID to espouse a Bottom Up philosophy. However, there is a big difference between espoused theory and the theory that a person or an organization actually uses. (See Argyris and Schon, 1974.) There may be reasons why AID is constrained from change by outside pressures. Possibly it is willing and able to do so, but meets resistance from the universities themselves or from clients abroad who would feel threatened by Bottom Up philosophies being unleashed among their own constituencies. Possibly everybody wants it but only a few know how to go about it. All of these factors are probably operative in some degree.

Let us assume a situation where everyone genuinely supported the idea of knowledge-pull and Bottom Up networking. There would still be the problem of how to be sensitive to needs expressed by primary groups and how to respond appropriately. As the two Bottom Up case studies will suggest, it is a very demanding task, based on considerable skill and tacit knowledge that cannot be easily transmitted. Out of all the discussion on this point a simple truth seems to stand out: one of the only sure ways to be genuinely responsive is for *planners and researchers and administrators to be in direct, everyday touch with the lives of the primary group targeted for improvement*. There is nothing surefire about this presciption but there is growing evidence that not much else by way of replicable strategies has worked. This point is elaborated further in Chapter VI.

(C) COMMUNITY SERVICE VOUCHER PROGRAM

The Service Voucher Program was funded under Title I of the 1965 Higher Education Act, which emphasized the application of university resources to the amelioration of social inequality (Pitts, 1975, p. 4). The program provided communities with vouchers which they could use to "purchase" university services. The idea reportedly originated at Northwestern University among staff of the Center for Urban Affairs, and was developed through a proposal to the Illinois State Board of Higher Education which had been seeking ways to apply Title I funds.

Community Service Vouchers were implemented in a context where resources such as university-based expertise were quite plentiful and the logistical problems of getting it in touch with poor communities were not overwhelming. Therefore, the lessons of this case study must be extrapolated to LDC contexts with some caution.

Descriptive Variables

1. Structure. The Service Voucher Program was located in the Center for Urban Affairs, giving it a somewhat different setting from the usual academic department. Nevertheless, the effects of university structures were felt. For example, the university accounting bureaucracy proved a major obstacle to smooth and trusting relations between university and community participants (Pitts, pp. 44-45).

Much of the work took place within the communities served. This closeness to primary groups also created certain problems. Staff of the Center perceived occasional laxness of community participation, and inconsistency in the mood and leadership of community counterparts (Pitts, pp. 39ff.). For similar reasons, problems were also foreseen in expanding the program. Some community groups that were considered especially deserving of help were not sophisticated enough or sufficiently organized to qualify for more conventional funding. Nevertheless, staff from the Center were described as having more concern for building up the infrastructure of the client organizations than for building up their own - one mark of a Bottom Up project.

2. Knowledge Content. This program required an integration of codified and contextual knowledge. Although university staff were clearly interested in drawing general lessons from their experience, the specific project required a great deal of contextual knowledge which presumably had little value for publication or even carry-over to other projects. Projects

undertaken included rooftop greenhouses using solar energy to grow food for low-income Chicago residents; health care planning; improvement of a community newspaper; development of an auto repair shop aimed at training and employment opportunities for a confederation of ex-prison inmate groups; and other projects.

3. Linkages. The vouchers helped community groups to take the initiative in designing working relations and the content of advice. The client was given the option of redeeming vouchers at other organizations in cases where Northwestern University could not respond with appropriate categories of expertise.

Given that small amounts of money were provided for each grant, for a limited time frame (usually $10,000 for 12 months), efforts were often made to secure follow-up links to other, more established sponsors.

4. Rewards. Vouchers provided payments to staff in addition to regular salaries. It was recognized, however, that consultants would not have accepted their assignment for the fee alone; nor did most of the faculty perceive their community activity would be rewarded by the university. Instead, most were motivated by personal concern for overcoming major inequalities in American life, based on ideological commitment, the philosophical orientation of the Center for Urban Affairs, and in some cases "personal need" to take action in support of professed belief (Pitts, p. 42).

Although the university-community dialectic proved painful on both sides, conflict was accepted and overcome because the perception of these gaps was seen to be at the heart of the problem of university-community relations, and with the effort to confront directly and resolve.

5. Indicators. Since the community was able to set and enforce standards for the programs it sponsored, it can be assumed that more reliance was put upon ad hoc measures than more formal and quantitative indicators typical of evaluation processes such as cost-effectiveness analysis.

The voucher arrangement insured that the community remained in control of the funds, lessening the chances for cooptation by the "experts" and avoiding the exploitation of community groups as passive research objects. Northwestern experience suggested, however, that community groups needed to insist on "step-by-step accountability from their university consultants and helpers" if they were to get services which fit their needs (Pitts, 1975, p. 43). Accountability of community groups to the university was also seen as important, and this sometimes created problems.

6. Development Philosophies. Vouchers in effect forced resource systems to collaborate with primary groups who were learning to define their own problems as they saw them. Auto repairs may have seemed a mundane focus of university assistance, but it forced Northwestern faculty and students to (a) focus on tangible achievements within the 12-month time frame of voucher projects, (b) consider priorities of the client above those of their academic peers, and (c) consider the importance of real jobs as a context for training disadvantages people, rather than trusting the open market to take care of post-training employment.

(D) INTER-AMERICAN FOUNDATION (IAF)

The Inter-American Foundation (IAF) officially began operations in March 1971, whooly funded by the U.S. Government with a broad mandate to "find a new way to support development activities in the Western Hemisphere."

IAF was said to be a new approach to development and an "experiment" in foreign assistance. Historically, at least one line of IAF development came out of the writings of George Lodge and his "Engines of Change" articles and later book.

The IAF operates totally within the western hemisphere. Its projects have included self-employment and marketing schemes, programs for increasing small business and other economic opportunities for blacks, especially in the Caribbean, credit unions, agricultural techniques useful to small cultivators, rural education, and housing.

Descriptive Variables

1. Structure. By design IAF was to have a small staff of about 60 professionals, all based in the U.S. but experienced overseas. Its purpose was to offer capital, but not technical assistance, in support of new approaches largely generated outside the host country government agencies. IAF provides small and medium-sized grants, and intervenes little in the initiation and design of projects and the management of the grants. The budget is about 30 million a year.

The staff is housed near Washington. Chief officials of IAF are a President and Vice President, working with a Board of Trustees and answering ultimately to the foreign Relations Committees of Congress.

2. Knowledge Content. IAF is not directly engaged in support of education, much less educational planning. It does not support activities that are educational in outcome, but it identifies no formal sector of "education" as such, and works primarily in support of what may be called "non-formal" education. In its early years IAF shied away from explicit attention to knowledge generation, exchange and transmission, but now

seems to be concerned with more effective transmission or even exchange. It phrases this in the form of concern for some record or memory of learning from project experience, and does have staff members thinking, talking and writing about the matter. IAF also is attempting to group systematically certain kinds of projects such as rural production cooperatives, worker managed enterprises, cooperative housing efforts, community development projects (not called by this name in IAF), and rural family schools. These groupings are established to encourage comparative assessment of experience in these projects and inter-site and inter-country exchange among those involved in project management.

3. Linkages. IAF does not directly sponsor U.S. university-based generation, exchange or transmission of knowledge, but it does work with some university people and, of course, uses knowledge that was originally generated in universities. Nor is it closely connected with other sponsors. It does link to private agencies, generally in the developing countries, but avoids where possible direct ties to government agencies in the countries.

It exchanges knowledge with LDC clients who work directly with primary groups. It does not work directly with primary groups, although IAF traveling agents do see and talk to primary group members (farmers, students, community people) and draw inferences from these contacts about underlying attitudinal changes. Thus, IAF might exchange information with the offocials of a cooperative, or with the officials of a general agency supporting several cooperatives, but IAF staff do not work with the members of the cooperative directly.

With its emphasis on giving capital rather than advice, IAF embodies the Bottom Up philosophy of letting communities define their own needs. As IAF accumulates its own knowledge base derived from experience of their clients, some of this feedback will probably be put to use as a guide for working with future clients either embodied in direct advice or used as a guideline for selecting groups to support. In an overview statement, "Feedback-Feedforward" (May 10, 1975), IAF describes its intention of supporting the clients' own knowledge, views and capabilities rather than imposing Foundation advice. To quote from the IAF statement:

> It was decided that those directly involved could best understand their own phenomena and therefore were uniquely qualified to determine and implement their own theoretical and practical solutions. This became the assumption on which the Foundation's approach was and is based.

The fact that IAF acts as a sponsor of some projects and not others, however, suggests that it must have some criteria for judging what is worth supporting and what is not.

4. Rewards. IAF being a new institution, it can do without the incentives and extrinsic rewards needed by a more mature institution. Staff seem motivated by the prospect that they can make a significant contribution to the state of the art in the field of development practices. A portion of their energy goes into thinking and writing about this. It remains to be seen what will happen if and when their work gets to a stage of seeming to repeat itself. In contrast to programs like ACPO, Ahmednagar (the next case studies), IAF has sidestepped the business of institution-building. Unlike ECIEL, it eschews carrying out a systematic research program aimed at influencing specific policies. It seems more like the Center for Urban Affairs at Northwestern University (previous case study), where staff were motivated by a search for "something different." Like the people at Northwestern,

IAF does not foresee a sustained process of arriving at a formula for truth. Under these circumstances, one can imagine that the rewards of IAF work could become jaded as the institution matures - a familiar pattern elsewhere.

Future policies to avoid this pattern of bureaucratic jading could take various paths: (a) IAF may seek high turn-over in its own staff, renewing their sense of being involved in "something different," and also providing a channel for disseminating its highly contextual knowledge base into other organizations, through staff transfers, an approach adopted by the Peace Corps; (b) it might begin to codify its knowledge and provide the long-term rewards of accumulating validated truths, inspired by the same motives that operate in universities or projects like ACPO and Comilla; or (c) IAF staff may seek out (or perhaps already possess) a strong enough sense of identification with primary groups that they can find a sustained satisfaction in the intrinsic process of providing ad hoc services.

5. Indicators. IAF is reluctant to use specific indicators of project successes. Evaluation is felt to be demeaning once a project is started; objectives considered beforehand are treated as peculiar to each project; and the outcomes deemed most important are seen to be measured best in subjective ways, by the way people look, smile, frown, or stride purposefully around. Decisions on whether to fund a project refer to some forms of processed data (IAF emphasizes equity which can often be described by hard statistics), but pre-funding analysis is also based on opinions, heresay, and observations from staff, project participants and others.

No set of indicators has been developed for IAF, and perhaps no general set could ever be satisfactory. In discussion with IAF staff, there appeared to be some agreement on the kind of indicators that would serve in assessing IAF development activity. The following list emerging from the discussion is somewhat vague, but perhaps it offers a first step for dealing coherently with the problem of systematically assessing how IAF affects development. Appropriate indicators for IAF would have these general characteristics.

(a) Cover social as well as economic outcomes.

(b) Be weighted slightly more toward social than economic.

(c) Be expressed in both quantifiable and non-quantifiable terms.

(d) Refer to a status that is observable; or

(e) Refer to an underlying condition that is inferable (hence if not objective then at least inter-subjective, i.e., more than one person could reach the same inference, however it was reached).

(f) Observed states or conditions could be quite simply indicated, but stand as surrogates for profound underlying changes.

(g) Indicators could reflect different things to different observers, a requirement that does not call for a single interpretation but is merely explicit about multiple interpretations that are possible.

(h) Indicators could be sorted, ranked, or weighted according to IAF theory and philosophy, and the ranking might change for different settings and circumstances.

(i) Indicators could weight process more heavily than outcome, i.e., suggest how far the enterprise has come from where it began, and where it might go, rather than stress where it is at some one time.

(j) Indicators might also show where a project is within the context of where it could be, i.e., reflect realization of constrained opportunity.

(k) Indicators should be indigenous where possible, come out of the project, be consistent with the values of the participants and be judged so by the participants. If possible the indicator statement should be expressed or expressible by the participants from the primary group, i.e., what they would look for as guideposts over the course of the project.

(l) The indicators should always be understandable or intelligible to primary group members.

(m) Indicators might turn out to be highly situational and particularistic and there should be no limit on the number and kind, i.e., there should always be a project-specific section of indicators.

(n) Indicators can be behavioral, but this behavior does not have to be overt.

6. Development Philosophy. This is explicitly reflected in the list of indicators above. It is important to note that IAF came into being at the beginning of the seventies when there was general disenchantment with conventional and large-scale development assistance. This dissatisfaction stimulated a number of assessments of past efforts and proposals for future change in foreign assistance. Project emphasis has consequently been on social as well as economic development, and especially social justice and equity. The overall aim of IAF is to encourage local self-help and cooperative endeavor, and to promote quiet revolutions in economic and social

relationships. What this means operationally has been suggested in the previous discussion of rewards (item 4 above)

(E) ACCIÓN CULTURAL POPULAR (ACPO)

ACPO is a network of radio schools in Colombia founded by a priest, Jose Salcedo, who was a young chaplain of the Andean town of Sutatenza and also an ameteur radio operator. Since 1947 this network has expanded and now has eleven stations reaching some 250,000 students throughout the country. ACPO provides education in basic literacy and mathematics, health, agriculture, and religion, and also provides entertainment and news services. Radio instruction is complemented by textbooks and booklets (called The Peasant Library), a newspaper, records, and magnetic tapes. Letters from listeners are solicited, both as a means of providing ACPO with feedback and a way of providing a capacity to respond to direct requests for specific kinds of knowledge not handled through other channels. ACPO is mainly self-financed through limited advertising revenues and commercial use of its printing press. It gets additional support from the government of Colombia, and donations from Colombian and foreign institutions.

ACPO is directed toward isolated peasants, with the goal of enabling them to participate actively in the economic, social and cultural activities of the nation. At the present time, it is the most important institution in the field of popular education in Colombia and is a model for the promotion of rural development in all Latin America. The Institution comprises 250,000 registered students and nearly 20,000 radio schools throughout the country. It provides a fundamental and integrated educational system whose contents are found in its five core textbooks: "Alphabet," "Numbers," "Health," "Economy and Work," and "I Believe in God." The overall purpose of this basic education is the "evolution of the person as an agent of development."

Contacts between headquarters and the primary groups are made through activities of the radio schools at the local level, for formation of peasant leaders and direct correspondence between the institution and the peasants.

The radio programs are transmitted through eleven broadcasting stations of between 10 and 25 kilowatts, installed in four regions of the country. Approximately 10 percent of the program consists of special transmissions for the radio schools; the remainder is composed of other educational transmissions, entertainment, radio theater commentaries, news and music. The weekly newspaper "El Campesino" is the most important periodic publication in the rural regions of Colombia, and has an average printing of 50,000 issues. The Peasant Library is in a continuous process of expansion. In a typical year (1968) it issued twelve volumes (370,000 copies) each one selling for the price of one egg. This library, coupled with the newspaper, offers peasants who learned to read and write in the radio schools the opportunity of practicing and improving their acquired knowledge.

The activity of the radio schools at the local level accomplishes both educational and administrative purposes. Regional and local representatives of ACPO supervise the work and the results obtained in the radio schools and try to encourage and give advice to the peasant families. The schools themselves are founded by peasant leaders trained in two special institutes located at Sutatenza and Caldas. By the end of 1968, these institutes had trained 6,222 men and women leaders. The average time of active collaboration of these leaders with ACPO is approximately two years.

ACPO receives around 60,000 letters a year, each of which is systematically answered, filed and evaluated in accordance with sociological criteria. The insitution considers this correspondence an important medium for sounding out public opinion and evaluation of its programs.

ACPO has reached well over a million students. The growth of the program is shown in the table below.

Year	Towns	Radio Schools	Students
1948	1	3	45
1953	318	1,804	15,648
1958	792	17,162	145,248
1963	905	24,059	227,735
1968	1,000 (approx.)	20,000 (approx.)	179,685

It is estimated that approximately 30,000 persons annually learn to read and write in the radio schools. The annual number of students who finish the advanced course (studies of production techniques and rural economy) is between 20,000 and 50,000.

ACPO regularly organizes campaigns to encourage the adoption of innovations in the fields of health, social hygiene and production. For this purpose the institution programs all its elements of action in such a way that during a campaign, both the broadcasting stations and the newspaper as well as the peasant leaders actively participate in the dissemination of relevant information. The leaders inform ACPO's twenty regional offices of the results of the campaigns and of the work of the radio schools. The offices then transmit this information to the headquarters in Bogota for the purpose of quantitative and qualitative evaluation.

Descriptive Variables

1. Structure. In terms of the Top Down/Bottom Up dichotomy, ACPO operates in both areas. Top Down structures are employed to get knowledge out to villages, and to get it received and implemented once it gets there; but there is also encouragement of requests for knowledge from the village level to which ACPO is asked to respond.

At the regional and international level ACPO acts in a Bottom Up format for the most part, essentially seeking out appropriate knowledge, evaluation services, and sources of support, rather than becoming a channel for the implementation of development efforts originating outside.

2. Knowledge Content. ACPO appears to network both codified and contextual knowledge. Codified knowledge is spread via packaged media (newspapers, textbooks, magnetic tapes). Contextual knowledge exchange takes place in the form of letter correspondence, broadcasting of dramatic programs, and recruitment of leaders from among people from typical rural backgrounds.

3. Linkages. ACPO can best be described as a network at the regional level which encourages linkages at local and inter-community levels. It aims at giving both individuals and communities greater access to a range of knowledge resources (e.g., The Peasant Library), and in this sense it encourages a Bottom Up approach. It provides an alternative to the kind of capital-intensive solutions to rural problems that are found in other rural development programs such as IRRI. Nor does it monopolize education, in that it works alongside regular formal education. On the other hand, it manifests Top Down linkages as well. (a) It maintains an explicit identity with the Catholic Church, (b) It is one of the strongest members

of ALER (Latin American Association of Radio Schools), (c) It has recently made arrangements with the Center for Educational Technology at Florida State University for evaluation services both to help ACPO in assessing its operations in Colombia, and to make ACPO resources and experience more available to institutions wishing to establish similar systems elsewhere, (d) Its development campaigns also reflect a Top Down strategy, (e) Because it finances its operations through radio and newspaper advertising revenue, it has the (probably unintended) effect of promoting commercial interests among its audience, though these interests may be well screened, (f) The messages going out through the Library, records and tapes are, at least in the short run, based on a well defined view of community problems and ACPO's role in relation to them.

It should be noted, however, that ACPO also encourages and responds to community mobilization and requests for knowledge which ACPO might not already provide. This is seen in the letter correspondence program, and in the recruitment of its own staff from client populations instead of from national or international elites.

4. Rewards. As in the case of IAF and the Service Voucher Program, ACPO relies on the intrinsic motivation of rendering service in close contact with the beneficiaries. Nevertheless, the significance of these intangible rewards is enhanced by several factors. First, the work is recognized as God's work in the eyes of the church. Second, ACPO has a more explicit ideology than most Bottom Up programs about the forces of oppression that need to be resisted. (Paolo Freire capitalized on the same motivation in his promotion of literacy as a way of liberating people from the oppression of ignorance and exploitation by others.) Third,

ACPO confers a sense of systematic tangible progress that is not as visible in the ad hoc achievements of the other Bottom Up cases reviewed. Its knowledge assets, in particular, are growing both in range and diversity of media; its staff have channels of upward mobility, all the way from first exposure to the program as learners up to leadership and management roles; its experience becomes increasingly rich both in degree of generalizations and detail; its international recognition grows. Finally, ACPO is blessed with a leader who chooses to keep a low profile and give credit and leadership experience to others.

5. Indicators. ACPO appears to have reservations about the imposition of a priori indicators of success, as these might distort sensitivity to the real needs of particular communities. The comments made with respect to IAF indications also apply here (see previous case study).

On the other hand, ACPO seems more willing to identify priority needs, as reflected in its five textbooks. Its knowledge is derived from many years on the scene and its growth has been evolutionary rather than a sudden imposition of imported ideas. It therefore has a superior basis for trusting its formulas.

Superimposed on top of ACPO's indicators for self-evaluation, one discerns a different set of indicators generated for the purpose of securing outside funding. Florida State University is beginning to become involved in evaluation of ACPO, possibly in connection with this need for external reporting. "External-use" indicators at ACPO refer to such things as numbers of schools, publications, students, or hours of broadcasting. Certain indicators may serve both internal and external purposes, including rates of improvement in literacy, target achievements for specific campaigns, numbers of local development projects launched, and newspaper readership rates. Still other indicators may be much more subjective, in the manner of those used by IAF.

6. Development Philosophy. ACPO's views on this are extremely explicit. They are outlined, for example, on the inside cover of its booklets and described at length in the five textbooks. Its message refers to both the Christian spirit of its work and the substance of its development activities.

The content of this philosophy has already been indicated in the previous section on the rewards that motivate ACPO participants. ACPO shares with other Top Down philosophies a solid belief that technical know-how is important, along with a willingness to intervene against the physical manifestations of poverty, drawing on massive coordinated efforts and a comprehensive assessment of the underlying causes.

On the other hand, ACPO puts much stress on Bottom Up factors - the intrinsic reward that accrues to helping others, and the intrinsic goals of competence and control over one's destiny. In this way, ACPO goes beyond most Top Down strategies in appealing to non-utilitarian forces of social action. Whether these are seen as religious or based on socialist principles or drawn from the dynamics of rural cultures lost to MDCs, ACPO can make use of them in ways that foreign technical assistance cannot. Whereas many technical assistance missions might ignore their very existence, ACPO might consider their preservation more valuable than all the rest of its tangible achievements. Whereas foreign aid might emphasize the functional aspects of a program, ACPO might be more concerned about what it does to the beneficiary's identity and spirit of generosity.

While foreign advisors might seek to create material incentives for rural development (hazard-duty pay for social mobility), ACPO would be wary of extrinsic rewards like these, which could foster an attitude of "winners and losers," or "what's in it for me?" Attitudes of cooperative selflessness which foreign technical assistance rarely takes into consideration are seen by ACPO not only as resources for effective action, but one of the highest goals of development.

(F) AHMEDNAGAR COLLEGE, CENTER FOR STUDIES IN RURAL DEVELOPMENT

Ahmednagar College is located in Maharastra State, India, in an initially backward district. In 1961, the college embarked on a rural development study and pilot project at Chand Bibi, six miles from the college. Programs were instituted for soil conservation, use of improved seeds, fertilizer and insecticides, health and literacy programs, adult education, and family planning clinics. Farmers exchanged views in four conferences that highlighted typical problems of the district.

By 1969, students were involved in change processes in rural areas. Farmers had formed cooperatives for credit, growing, and processing. Students helped farmers start cooperatives for credit, farming, poultry raising and processing. The project eventually grew to embrace 29 villages with an impact on 100 villages and 15,000 people. Immunization programs were initiated and are now supported by the villages. Thirteen years after project initiation, farm production has quadrupled.

India's Ministry of Education was impressed enough by the success of this project that the college was made an overseer for a national service scheme which included 100 colleges. Poona University has incorporated the program into its regional outreach and 41 colleges have adopted some or all of its program features.

With the establishment of the Center for Studies in Rural Development at Ahmednagar came an interdisciplinary program of study and research combined with participation in community affairs. It offers one-year or two-year diplomas in rural studies. (M.A.'s and Ph.D.'s are given by Poona University.) The center accepts 20 graduate students and 100 undergraduate students each year. Eighty percent of the undergraduate are from rural areas and about 90 percent of these go back to rural areas.

In addition to graduate and undergraduate programs, the Center offers courses in agriculture, family planning, and community development to professors in charge of the National Service Scheme. Professors from 140 colleges receive a two- or three-week orientation course designed to equip them to set up similar programs at their own colleges.

Descriptive Variables

1. Structure. As in the case of ACPO, Ahmednagar College focuses on both division of labor among knowledge resources and mobilization of communities to solve their own problems. Division of labor can be seen in the retention of a quasi-academic system, with instructors in various specialties and students receiving specialized training. At the same time, the coordination of different specialties seems to take place through the process of knowledge utilization and community mobilization. In other words, Ahmednagar seems to be using community organizations to integrate the relatively highly differentiated elements of Top Down network elements.

2. Knowledge Content. In terms of the distinction between codified and contextual knowledge, Ahmednagar College appears to have enriched its codified knowledge with contextual knowledge acquired in the course of

delivering services and resources to surrounding communities. It teaches both theoretical and practical knowledge in its coursework, and uses both village projects and classrooms as learning sites.

The college is the only one in India having a program that specializes in social work in rural rather than urban areas.

3. Linkages. Although faculty and students spend considerable time in the field, the center is modest about claiming to provide technical expertise. They do know where to go to get it through other agencies. In giving their clients access to other resources, rather than monopolizing its provision, the center illustrates a Bottom Up approach. In other respects, it has Top Down features as well. The college disseminates its approach to other colleges and universities. The expression of demand has also been influenced in the sense that the college initiated contacts with the villages, and the problems of participating villages were mostly defined by the college, rather than by the villagers themselves. On the other hand, Ahmednagar puts considerable faith in villagers' ability to implement and manage its problem solutions. Moreover, it stresses solutions which did not disrupt village social and economic interactions, and is cautious about pursuing modernization as a goal in itself.

4. Rewards. Ahmednagar does not see itself significantly involved in the business of research or technical assistance. This means it has no vested interest in selling preconceived solutions to development problems and can be more sensitive to Bottom Up views. As a teaching institution it runs on the same motivations that can be found among inspired teachers anywhere. They have taken unusual steps, however, to create stimulating teaching settings out of previously depressed rural

villages. This reflects the college's earlier struggles over the issue of an outreach philosophy, as noted below.

5. Indicators. The college can take credit for much of the villages' improvement in areas of health, basic education, agricultural production, and the marketing of agricultural products. Its role here was nevertheless that of a knowledge broker, providing villagers access to other agents of change. The most direct outputs from Ahmednagar can be counted by numbers of students graduated. Even more important is the outcome of the training, in the fact that fully 90 percent of the undergraduates go to work in rural areas. This hard indicator sums up a great deal about the subjective qualities of Ahmednagar: its identification with rural areas, and ability to motivate students to work there.

6. Development Philosophy. As a teaching institution, the college has been mainly concerned with gaining legitimacy for a style of learning from experiential realities and imbuing studies with a sense of moral obligations. This pilot project launches in 1961 was a gesture to fulfill the "social mission" of the college through study of the problems and goals of rural community which embraced the college. Aims of that project were: (1) to create responsible citizens and leaders who could act as catalysts for rural progress; and (2) to sensitize the academic community to social needs and integrate education with socio-economic-political processes of the country.

Initially, the college faculty disapproved of the "muddy hands" approach and felt it detracted from the primary function of an educational institution. Academic credit was withheld, government officials were unenthusiastic, and the villagers were suspicious of this collegiate invasion.

Evantually, however, the skeptics were won over, and today the Ahmednagar program is a model for numerous colleges and universities elsewhere in India.

5. Recapitulation

The six case studies just presented are not meant to portray a balanced overall view of the institutions represented, but only selected features that specifically relate to the problem of knowledge networking. A principal conclusion that might be drawn from this review is that knowledge networks display great variations, depending on their setting and purposes. One cannot specify an optimal network strategy, but only contingency strategies, each one geared to explicit purposes and situations.

Readers of this study might wish to draw their own conclusions about the usefulness of the six variables chosen to describe knowledge networks. In the author's opinion, the variable of development philosophy is paramount in describing the kind of network one is dealing with. Although it is difficult to measure philosophy in clear and objective categories, it is this feature of knowledge networks that best defines their purposes. For this reason, it has a strong influence on the other descriptive variables, particularly performance indicators and reward structures, but also on knowledge content. The other two descriptive variables, structure and linkages, figure more prominently in traditional descriptions of knowledge networks, but in fact these may be relatively superficial features of a network, in the same way that organization charts are sometimes only a facade on the real workings of an organization.

The Top Down/Bottom Up dichotomy appears to be a useful way of distinguishing between major schools of thought about social and economic development, with direct consequences both for strategies of educational planning and the design of knowledge networks. In the long run, a mixture of TD and BU approaches appears necessary. It might also be argued that within every effective planning organization, and in every effective knowledge network, there must be a capacity to incorporate and synthesize both TD and BU views. This is a supremely difficult task, as discussed next in Chapter IV. The difficulty helps explain why organizations like ACPO and Ahmednagar College, which have sought to sustain such a synthesis, are so rare. It may also explain why historical trends in strategies of technical assistance have tended to vascillate between TD and BU approaches, without much success in striking a balance between the two, at least up to now. (See Chapter I, Figure 1.)

In short, the TD/BU dichotomy helps to clarify the problems and opportunities of making a synthesis between the two approaches, a task which is argued here to be of historical significance. The TD/BU categories have another use, however, and that is to provide a descriptor for sorting out like and unlike programs in a way that helps similar programs learn from each other. This permits a more valid basis for comparison among programs with the same objectives, and it helps identify appropriate participants in any particular knowledge network, on the basis of what they have in common or how they complement each other's strengths and weaknesses. In this way, some of the traditional barriers separating one organization from another might be overcome, including national boundaries, cultural differences, urban vs. rural location, LDC/MDC status, or differences in scale of operation. For example, a development organization or planning agency with a Bottom Up philosophy in Watts (Los

Angeles) may find more to learn from ACPO or Comilla or the Inter-American Foundation than it does from a Top Down organization close by. ACPO, though best known for its work in radio schools, may have more to gain from knowledge exchange with the ITDG in London or Ahmednagar College, India, than it might with other radio schools in Latin America having different philosophies of social and economic development. In this way, some of the failures of past attempts to link organizations might be explained: agencies "in the same business" may in fact be pursuing very different goals. They may be using the same means - radio schools, training programs, newsletter dissemination, change agents, research projects, action comapigns - but employing them with different purposes and outcomes, and with different susceptibilities for self-transformation through learning. These issues of learning style and development potential go to the substantive heart of educational planning efforts and the design of educational knowledge networks. In this sense the TD/BU distinction may be an important point of departure for discussion in this field.

CHAPTER IV

PERCEPTUAL DISTANCE AS A BARRIER TO KNOWLEDGE UTILIZATION PROPOSALS FOR INTEGRATION OF NETWORK PARTICIPANTS

1. Perceptual Distance

In the major literature on knowledge networks, knowledge transfer is considered a problem of bridging physical distances, mainly between the more and less developed countries, and creating channels of information flow between organizations. (Berman and McLaughlin, 1974; Havelock, 1971; PADCO, 1975; Thompson, 1975; University of California at Berkeley, 1976; Leavitt, 1975.) The present study suggests, however, that the gaps are not primarily a matter of moving information over space. Modern media has shrunk the distances dramatically, and information flows have increased so rapidly that they already overtax the asorptive capacity of many users in LDC's.

The gap that remains is of another sort: it consists of differences in perspective that knowledge producers and users bring to bear on educational problems. The key to effective networking seems to be a capacity to see a problem from the perspective of both users and senders of knowledge. It requires holding two or more very different and often contradictory images of reality at the same time. This does not come easily. It requires a "cubist" perspective on reality - an attempt to portray the same scene simultaneously from several angles. For those without sympathy to this approach, a cubist painting might simply seem to portray a woman with two eyes on the same side of her face. For Picasso, on the other hand, it was a revolutionary attempt to communicate a depth of understanding that comes only from multiple perspectives. A knowledge network faces somewhat the same challenge: it is an attempt to transmit information that has simultaneously different meanings for the sender and user. The problem of networking is the problem of reconciling these perspectives in a single image that can span the perceptual gaps.

This chapter reviews some of these gaps. They involve recognized problems of bridging languages and cognitive disciplines, but they also include emotional, experiential, and ideological differences.

2. Historical Memory as a Source of Multiple Perspectives

One can identify various dichotomies in educational planning knowledge, representing different perspectives on educational problems. Planning can be described as Top Down or Bottom Up (See Chapter II); the knowledge base can consist of codified, generalized information or a narrower but richer base of isolated experience (Chapter I). One can debate educational strategies with industrialization in mind, or with top priority given go self-help subsistence for the poor majority.

Sometimes these debates are fruitful, and this is when networking begins to pay off. The challenge is how to make it pay off more consistently. More often than not, "progress" in technical assistance strategies consists of flaws being discovered in a particular approach with a consequent movement of opinion toward the polar opposite: instead of heavy industrialization, "appropriate technology" and "self-reliance"; instead of universal schooling, non-formal education or "de-schooling," as advocated by Illich; instead of centralized planning, self-reliance. But the new solutions reveal their own flaws, and old ways are rediscovered in turn. Two examples stand out from this research. One is the long-term historical trend in technical assistance strategies described in Chapter I. In particular, one is struck by the cycle of commitment and neglect regarding outreach to the poor majority. This comprises the movement from Nineteenth Century missionaries to postwar change agents, then "institution building," and more recently "knowledge networks." In confronting the problems raised in turn by networking, appropriate solutions begin to be found precisely back where it all started. Today, the rhetoric of international development (and it makes considerable sense) calls for a stronger ideological commitment to the poor majority, and a closer-up picture of life at the grass roots. Have we thus come full circle, back to the missionary model? Or can the various threads of historical experience be knit together in a more effective fabric of technical assistance?

Those who have made the clearest case for the "new style" of technical assistance have rarely been motivated to reintegrate their insights with a simultaneous appreciation of lessons from the last 100 years. Each new (or rediscovered) strategy arises in reaction against the flaws of the preceding one, whose virtues are only apparent in contrast to still earlier strategies (see Figure 1 in Chapter I). Yet the present decade is perhaps unique in the history of technical assistance, in that we can begin to see "progress" as something that may not be entirely linear after all, but a process of coming full circle. The challenge of change then shifts from one of overcoming the past to one of retaining its presence and constantly reintegrating its lessons with those of more immediate events.[1]

Chapter II provides another example of oscillation between polar views, and the consequent failure to achieve both confrontation and resolution of views on the appropriate content of "useful" educational planning knowledge. In that chapter, we reviewed two forms of knowledge networking, noting the major strengths of each, and the design tactics that might help to overcome their respective weaknesses. In the exercise, a pattern emerged: tactical improvements on each approach tend to be in the direction of reinventing the ideal contained in the other alternative. In other words, networks that seem to be most effective in getting knowledge from producers to users are those which have managed to combine features of both Top Down and Bottom Up systems.

Thus, a working hypothesis emerges:

> A major cause of failure in utilization of educational planning knowledge may be the tendency of networks to be highly specialized in a particular view of knowledge functions, without the mechanisms for bringing about a necessary integration with the opposite approach.

3. When is a One-Sided Perspective Warrented?

The hypothesis just stated can lead to the wrong implications for designing networks, unless some important qualifications are made.

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[1] Western thought has been wedded to the notion of continuous progress since the Age of Enlightenment. Now, however, we may be coming closer to Eastern perceptions of historical processes: "One of the cardinal concepts of Oriental thought . . . has been the belief that alternating, diametrically opposed forces govern the universe, like day and night. Each prevails for a time, but within it, like a seed or germ, rests the other force, which will eventually emerge and rule." (Bleiler, in Okakura, 1964, pp. vi-vii). Just as our "new" appreciation of ecological ethics directs us to work within the context of larger social and natural processes, the history of technical assistance should give us a better sense of using our past rather than leaving it behind. Basic philosophical attitudes like these may have an important bearing on the degree of neglect or utilization of available knowledge.

(a) Certain problems warrant "one-sided" knowledge. For particular, well-defined tasks of educational planning, there may be an exclusively best way of dealing with them, with prior recognition of an "optimal" solution. For example, in the distribution of well-tested educational materials, or promulgation of new regulations, or calculations of student flows, or census of student nutrition levels - none of these procedures typically calls for much debate on how to proceed. Each of these actions has some basis in a legitimate form of "superior" knowledge for the problem at hand.

Similarly, an accurate survey of community attitudes towards education requires care to exclude official views, to avoid a contaminated record of the way things look from a local perspective. This is another form of information that is appropriately one-sided.

At another, later stage of policy formation, one-sided knowledge must be confronted with other perspectives. But a prerequisite for this is an earlier stage of highly differentiated deep probes into one or another facet of educational realities.

(b) Some versions of "knowledge utilization" may call for only one-way flows of knowledge. As suggested earlier (Definitions, Chapter I), one can choose a somewhat stringent definition of knowledge utilization, taking this to mean application and validation of knowledge put to the test of practice. In this context, one-way flows of knowledge are rarely appropriate: feedback is needed both to validate expectations and to anticipate problems of future implementation.

On the other hand, knowledge utilization in the sense of application and validation may not be the goal of all knowledge producers or knowledge networks. Some organizations may simply be concerned with data gathering for use by an undefined audience (e.g., UNESCO compilations of educational statistics and other social indicators). Others may focus purely on knowledge production (universities) or dissemination (journals, professional meetings, clearinghouses). If one wishes to focus on these aspects of knowledge utilization, then "utilization" does not always call for a confrontation and reconciliation of different perspectives on educational planning tasks.

(c) Human nature. Confrontation of differing views may be impractical when one party has a positive aversion to using another's knowledge. There may be legitimate reasons for this. One is the "infant industries" argument: just as a developing nation needs to protect its trade against foreign manufacturers, it may need to protect its intellectual resources from foreign ideas that are out of step with local realities, or worse, contribute to an exodus of a country's best minds. (A case in point is Jamaica, where recently the annual emigration of post-secondary graduates has come to exceed the number annually produced, resulting in a net reduction in the stock of human capital at this level.)

Another reason for aversion to utilization of others' knowledge is quite simply that people like to find things out for themselves. Just as some academics feel despair at finding their own conclusions already published by others, ordinary people like to arrive at their own understanding of reality. This may be inefficient from the standpoint of getting maximum mileage from available knowledge, but the knowledge user has a different basis for calculating efficiency. The ability to generalize from one's own experience and the sense of making a personal contribution to others are recognized dimensions of personal competence and satisfaction that cannot be separated from the more "functional" roles of individuals in organization. This has long been recognized (Barnard, 1950), but the theme of personal competence has come to take a more central place in organizational development theory in recent years (White, 1959; Rogers, 1961, Argyris and Schon, 1974, Hampden-Turner, 1975; Cooper, 1975).

(d) Under some circumstances, overt confrontation between views may be too costly to outweigh the benefits. Facing up to differences in views may be recognized as desirable in theory, but educational planners may have other reasons to avoid confrontation with their colleagues. Reasons for avoiding confrontation may include a strong personal distaste for it, or cultural norms against overt criticism, or an atmosphere of delicacy in dealing with foreigners. Different views may also fail to surface because of imbalances between groups represented: one party may have more expertise, more control over resources, access to more powerful means for expressing and legitimizing a position, better organizational means to exert indirect pressure, or simply more polished skill in debate and political infighting. Despite rhetoric of "mature partnership," technical assistance agencies start off with a strong edge on some of these counts, by mere fact of their position as "donors."

If the choice is to avoid confrontation, the procedures for accomplishing this are many and diverse: differences can be smoothed over by reference to "higher level" goals held in common, or by minimizing the difference between the various parties represented, or by treating problems as purely technical issues that can be deferred to expert opinion. Differences can also be submerged in analytical exercises that seek to define a wholistic overview of educational problems, which allows criticism to be treated an innocuous qualification of a "superior" paradigm of reality.

To sum up, the case for differentiating and then re-integrating different view in a knowledge network applies to a rather special set of circumstances, but it is a situation which probably characterizes much of the international endeavors of educational planning. It applies (a) where the problem is less than fully defined, leaving room for conflicting perspectives on the interpretation of knowledge for appropriate action; (b) where there are grounds for a genuinely equal hearing for groups representing different views, or at least a strong political commitment toward that end; and (c) where there exists a capacity to tolerate explicit conflict, rather than smooth it over, rush to compromise, insulate one view from another, co-opt or suppress one view, subsume one as a mere component of the other, or simply refer matters to "higher authority."

4. A Practical Theory of Knowledge Application and Validation

To repeat the working hypothesis stated earlier: the key problem of knowledge utilization is the highly differentiated perspectives that knowledge producers and users bring to bear on educational problems. For some purposes, one or another perspective can be allowed to dominate, with knowledge flowing mainly in one direction. For many or most educational planning operation, however, effective knowledge utilization depends on managing explicit conflicts between different views of a problem in order to keep knowledge moving both ways.

There has been considerable writing on the problem of differentiating and integrating different problem perspectives. Much of it is well summarized and further extended in the work of Lawrence and Lorsch (1967). Their theory is briefly as following:

1. There is no "one best" model for an effective organization. The more dynamic the "environment" (in respect to technical change, scientific development, and outside demands on the organization), the more highly differentiated must be the forms of thinking that go on in the organization, and the greater the need for dealing explicitly with the conflicts that subsequently arise. In other words, the organization must be able to foster and deal with creative tensions among its members, if it wishes to deal with the special problems of a constantly changing environment.[1]

2. Management of creative conflict is a special art that requires more than good will and rationality and traditional human engineering techniques. It takes special insight to see conflict as a potential form of collaboration, and special knowledge of group processes to make these conflicts fruitful. (See also Cooper, 1975, Hampden-Turner, 1975.)

3. Differentiation of perspectives takes place on both cognitive and emotional levels and may reflect divisions of labor, special interests affected by the outcome of decision, differences in recognition of outcomes, or different assignments of responsibility.

4. As suggested earlier, there are many incentives to avoid overt conflict and many devices employed to avoid it, even when there is general recognition that a frank exchange of views would yield better results.

5. Conflict resolution is seen as "integration" of views that have appropriately attained a high degree of "differentiation" (appropriate,

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[1] Lawrence and Lorsch's conclusions are based on research in private business organizations, but their work has received attention among educators, and was seen by the authors to have important implications for the organization of international technical assistance.

that is, for an organizational environment that is rapidly changing or uncertain - a situation typical of educational planning). The more unpredictable the environment, the lower down in an organizational hierarchy the process of integration should begin. Integration is also favored by: explicitness in the recognition of conflict; neutrality on the part of persons taking on special roles as "integrators"; real incentives for working toward shared, higher-level objectives; and genuine respect for the knowledgeability of persons expressing differentiated views.

6. Devices to achieve integration vary, depending on the degree of initial differentiation between viewpoints. For weakly differentiated views, greater reliance can be put on weaker devices, including paper systems (schedules, controls, organization charts) and the authority found in management hierarchies. Highly differentiated views need to be bridged by more imaginative devices: temporary cross-functional teams; permanent cross-functional teams operating at both high and low levels of management; individuals charged with the specialized function of integration; and permanent integrative committees.

7. Integration requires more than managerial controls, however. Also important are interpersonal skills[1] and a general climate of trust. The theory emphasizes a style of informal collaboration at lower levels of management, free of "mechanistic supervision," and generally based outside of regular organizational channels and settings.

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[1] There is recognized disagreement about the extent to which "interpersonal skills" can be taught, for example through sensitivity training. Cooper (1975) presents a good compilation of literature on his subject, generally supporting the case for training laboratories aimed at creative group processes. Lawrence and Lorsch acknowledge other arguments, however, that interpersonal skills are too deeply ingrained in personalities to be easily altered (1967, p. 223).

5. Application of the Theory to Educational Planning

The specific nature of differentiation in knowledge networks may be expressed in terms of any of several dichotomies: Bottom Up versus Top Down perspectives on planning (see Chapter III); codified knowledge versus contextual knowledge (Chapter II); missionary outreach versus institutional bases (Chapter I); self-reliance versus higher-level mobilization for change (Chapter VI); long-run versus short-run priorities of helping the "worst first," versus imperatives for building on strengths. In more functional terms, it means dealing with specific educational tasks - curriculum development, logistics, staffing, construction and maintenance, counseling, research, needs analysis, testing and evaluation, media development, cost and finance, non-formal programs - all this, while somehow maintaining a picture of the whole. It may also include a sensitivity to missing ingredients in problem-solving puzzles. In one geographical area, the missing piece may be rural electrification; in another a problem of malnutrition or impassable roads. In rural areas, creation of jobs might be a paramount task of the educational system itself, if this can be shown to motivate learning, and if it prevents out-migration that would wipe out the intended effects of training.

One of Lawrence and Lorsch's points deserves special emphasis in connection with knowledge networks. Drawing on work carried out by Walton and McKersie (1965), they note that open exchange of knowledge depends a great deal on whether both parties stand to gain from a shared outcome. If this is the case, the best interests of each will be served by maximum pooling of information, candid recognition of any differences in goals, and joint search for new solutions. If on the other hand, a "zero-sum" situation applies (such that gains for one occur at the expense of the other), it will be in the interest of each to withhold information that may help the other. In theory, technical assistance falls in the former category, based on motives of altruism, shared values, and shared exposure to outcomes, and indeed one often finds in practice this kind of trustful relationship established at the level of individuals and their foreign counterparts. Nevertheless, at higher organizational levels, there is a more prevalent sense of powerful forces acting behind the scenes, with less possibility of candor, trust, or resolution of differences through the informal channels that Lawrence and Lorsch prescribe for this purpose.

This and other features of the "differentiation and integration" theory suggest a model for the kind of knowledge network that operates from a solid base of specialized knowledge, but which itself has very little institutional overhead - i.e., very little hierarchy and very high reliance on interpersonal contacts. For this purpose, overhead might go for a highly streamlined central office ("A letterhead and a top secretary are almost all you need," Joseph Grunwald has observed, describing his operations at ECIEL). Organizations that seem to follow this pattern include ITDG and SPRU in Britain, the IAF, and the so-called Sector Team mounted jointly by AID and the Government of Jamaica for that country's Rural Education Sector Loan.

6. The Jamaican Model

The work of this GOJ/AID team has already been alluded to in Chapter III, in reference to networking tactics that seem to have fostered effective knowledge utilization. It is worth noting again here some elements of that program which incorporate the principles of differentiation and integration just outlined. The first concerns collaboration with universities. One hears from numerous quarters doubts about the general ability of either American universities or the University of the West Indies to respond quickly and usefully to specific needs of the Ministry. Yet in fact one finds many specific cases of collaboration built upon personal acquaintances.

In this and other ways, one finds an almost deliberate avoidance of organizational channels and settings to encourage exchange of knowledge in dealing with educational problems. The half-dozen project teams within the Rural Sector Loan program are thrown together in one large room, where they can work at individual desks, but wander over to exchange advice with other teams whose work touches on their own. The Ministry of Education itself holds periodic "retreats" to discuss selected problems, sidestepping hierarchical relationships for the sharing of views and information.

Some of the GOJ/AID methods for integrating views are traditional managerial control devices (PERT charts; reports; frequent reference to the Rural Education Sector Analysis document and Master Implementation Plan; scheduled review meetings). Others reflect a mixture of attitudes and skills variously described by observers and participants with phrases like "discipline," "can-do attitudes," "team work," or "morale." To an observer on the scene, these qualities are very tangible and have a direct, practical bearing on the quality of interchange both within the project and in the network of information exchange with other Ministry groups, rural communities, and foreign collaborators. Yet to persons who have not experienced the process first-hand, these qualities of human relationships resist formulation in such a way that could facilitate their transfer to networking elsewhere. This is an extremely vital point to keep in mind for networking strategies, and it is worth some additional comment.

In the first place, it reflects Lawrence and Lorsch's findings that the integration of diverse views takes place best outside of established channels. The existence of an apriori organized framework for resolving different problem perspectives inhibits the kind of flexible give-and-take, moments of detachment, and sense of shared purpose that are necessary for resolution of conflict between problem elements. Formulas do have a place in theories or organizational development, but they generally aim at a "tightening up" of procedures, to yield greater order, control, systematization, routine and predictability. This can work at cross-purposes to the other requirements of networking which call for a loosening up of organizational structures, toward greater openness, sharing, creativity and individual initiative. (See Lawrence and Lorsch, 1967, p. 161.)

Second, conflicts do not arise in the abstract, but in the context of specific educational problems. The resolution of these problems must also refer to substantive realities, and not abstract principles. As Russell Davis expressed in the Networks seminar at Harvard, "Out in the field you have to duck and twist and jump all the time. Everybody has those skills in some degree, but how do you teach that, except by being out there and doing it? You can think about it with a hundred different theories, but when you've got to do it, the intellectual rhetoric will only get in your way."

One of the Sector Loan team members in Jamaica had similar thoughts: "A kid here can fail his exams because the truck that was supposed to bring his work books got commandeered to deliver teachers' paychecks when the regular truck broke down. How do you sit in Washington or UCLA and model those relationships in a way that will help Jamaicans?" From another member of the team comes another example: in trying to develop curriculum material reflecting needs and realities at the local level, one town will need to get experts in fishing; another will find that needed experts are right there - in the form of highly successful poultry farmers. In a third location curriculum might be required to deal with a small cooperative that has failed, leaving no tangible result, but nevertheless establishing a foundation of identity and purpose and self-reliance for future projects, if carefully nurtured. In yet another locality, the best thing the community might do is say, "Leave us alone; education can do more harm to this community than it might do good." Reflecting on this the team member asks, "How do you run that kind of curriculum program? There's no way you can run it. The real experts are out there; the action is out there. Schools can facilitate what the people want to do in many ways, but the community people are the ones who have to put it together. And they are doing it already."

There are, of course, some formulas. For example, the Jamaican team that undertook the Education Sector Analysis has been insistent that training be part of all its activities, and that Jamaicans take full part in the Sector study itself. (These principles are given credit for the fact that the Jamaicans have adopted the Sector Analysis as "their own" document, and have vigorously followed it up with implementation projects of their own design.) Other formula guidelines exist for "leadership training," and some courses in the subject are reportedly successful. Many ways have been described to manage group processes in general and the process of differentiation and integration (D&I) in particular.

On the other hand, while the spirit of the D&I theory is abundantly seen in the project just described, there is no evidence that the theory was ever explicitly applied. Knowing the theory may therefore not only be insufficient to make it work, but unnecessary. The theory works where people have grounds in their own experience to appreciate its validity. Otherwise, it appears a meaningless abstraction, a foreign language without an equivalent in the local reality. As in the Calvinist theory of salvation, when the spirit is there, good works will take care of themselves. But without the spirit - without the conviction arising from one's personal reality - good works and good theories are not a ticket to heaven.

This has a direct bearing on the role that universities can play in knowledge networks. In Jamaica, practice is at least up with the theory, and well ahead of it in some respects. There are gaps, but very selective ones: rarely are they in broad project areas that warrant major programs og long-term collaboration with foreign technical assistance agencies. Nor are the gaps nicely clustered in a way that any one agency could immediately respond to needs. The kind of knowledge most useful to Jamaica these days is an occasional need for the one or two people who are appropriate for the job, whom Jamaicans can trust and can make their own choice in selecting.

These elements of flexibility, refined need, and trust are all features of differentiation and integration that bear on the welcome use of foreign expertise in a situation like Jamaica's. Not every country is like Jamaica, of course, and the D&I theory is clear about the contingencies of the setting that bear on choice of appropriate strategies. Looking at knowledge networks from a Jamaican viewpoint, however, the value of linking LDC organizations with counterpart agencies in other countries seems to fade somewhat, yielding to a more sharply defined need for knowledge networks that can tap particular individual on an occasional basis from a world-wide pool of expertise. As part of such a network, the host country needs access to relatively informal channels of trusted advice that can describe the personal qualities of candidates. (The Sector team in Jamaica relies heavily on personal contacts in the AACTE - American Association of Colleges of Teacher Education.) The importance of personal qualities becomes apparent in the work style observed in Jamaica. It is also strongly indicated by the D&I theory, which identifies the stringent demands on interpersonal relationships for effectively bridging different forms of expertise.

In summary, this chapter has attempted to deal with the problem of knowledge utilization from the standpoint of reconciling a variety of perspectives and forms of expertise that are appropriately very different. The natural conflicts that arise demand a special ability to resolve. The more that people charged with implementing plans in the host country are in control of this process, the more likely they will utilize the knowledge required. Where confidence and trust can be established on grounds other than institutional channels, franker recognition of conflicts can take place, highly differentiated views can be re-integrated, and shared knowledge will give rise to greater chances of its eventual utilization. The kind of trust and interchange that this requires, however, seems less consistent with high-level agreements for collaboration between large organizations than it does with knowledge networks that can facilitate personal contacts among individuals. This is the level at which knowledge is ultimately received, challenged, modified, validated and eventually trusted enough to be applied to program actions.

CHAPTER V

COST-EFFECTIVENESS ANALYSIS APPLIED EDUCATIONAL PLANNING EFFORTS

In most conventional applications of cost-effectiveness analysis (CEA) we are trying to get from A to B in the cheapest way possible. In the case of educational planning, however, we often set off from A on a path to discover where B is. Moreover, if the journey is successful, it may end up changing our minds about why we wanted to go there. Other modes of conveyance may appear as we proceed; the very composition of "we" may have changed before we arrive. And in the end, we might find that we wanted to go to C instead of B anyway. In short, we face a difficult problem of trying to take aim on a constantly moving target. This is especially true where development programs are carried out in the familiar pursuit of "structural change." It is less true for projects that aim at monitoring and control or minor adjustments in the system.

In the course of this project, we have encountered some fundamental criticisms of the whole CEA approach. Some of these doubts are reviewed at the end of this chapter. No matter how valid these criticisms, however, they must be seen as qualifying rather than negating the usefulness of cost-effectiveness analysis.

1. Normal Difficulties in the Application of Cost-Effectiveness Analysis

Even the critics of CEA must somehow weigh benefits and costs of policy alternatives. This usually boils down to cost-effectiveness analysis in one guise or another - PPBS, Management by Objectives, logical frameworks, systems analysis, Goals Achievement Matrices, Planning Balance Sheets, Dialectical Scanning. The strengths and limits of CEA are present in any form of policy or project evaluation that addresses the basic questions:

-- What costs are accounted for, and how are they measured?

-- What dimensions of effectiveness are considered, and how are they measured?

Where costs and effectiveness are both considered in monetary terms or other quantifiables, no serious conceptual problems arise. Difficulties exist, but most analysts have learned to live with them. These include:

(a) Data availability. Unfortunately, this problem is usually worst where the educational needs are also at their worst - in the poorest enclaves of the least developed LDCs. Slight consolation might be found in the fact that in such situations, educational planning knowledge is not usually the limiting factor to social progress.

(b) Lack of agreement on specific analytical conventions. The problem is not a failure of sophistication in technique, but the lack of guidelines for judgment in a particular situation as to which techniques are valid in the context of local realities (see, for example, the discussion in Arrigazzi, 1972).

(c) Complex or indirect links between inputs and outputs. The frustrations of trying to construct educational "production functions" illustrates the difficulty of establishing input-output relationships as a basis for CEA in evaluation of educational systems. The problem is vastly compounded when one attempts to take evaluation beyond the educational system to the meta-system we call educational planning, a step several links even further removed from tangible outcomes of schooling. Some would argue that the chain of effects cannot be well defined regardless of improvements in our datas and models. They see a gray curtain descending between intentions and outcomes that can never be satisfactorily lifted: educational processes take too long to play themselves out. Moreover, at its best, education creates a form of social progress made up of inventive surprises.

Others maintain that the gray curtain can be penetrated. One can at least do tracer studies of graduates to correct the most serious misallocation of resources. One can provide an expanded analytic base to capture educational outcomes, in the form of employment opportunities for graduates, economic credit to go along with their skills, ideological guidance, and incentives to serve where most needed. The same could apply to tracking down the outcomes of past educational planning efforts, as a guide to their better use in the future. We have seen a few retrospective post-mortems on what went right or wrong for particular planning efforts, but these are probably a biased sample of the kind of planning that generally takes place.

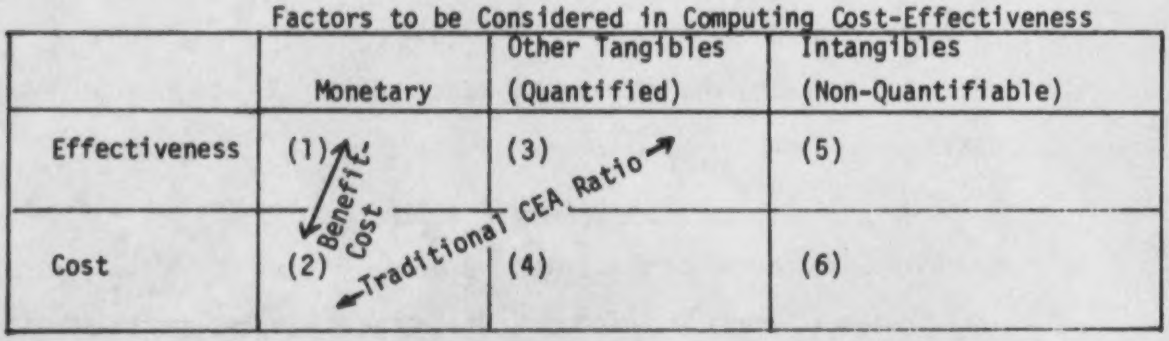
2. Neglected Dimensions of Costs and Benefits

In traditional cost-effectiveness analysis, a favorable ratio is sought between costs (expressed in monetary terms and some quantified measure of effectiveness. Many policy decisions appear to operate on a different basis of calculation, however. Indirect monetary benefits may provide the most critical leverage in choice among different educational programs or planning procedures.[1] At the same time, non-monetary items may have the greatest significance on the cost side.[2] In addition, there may be categories of costs and benefits that cannot be quantified at all, sometimes referred to an "intangibles." The various possibilities are summarized in Figure 6.

Clearly, it is not as straightforward a decision-rule to weigh these six categories against each other as it is to compare simple ratios of monetary costs (cell 2) against intended benefits (cell 3). Yet there is no ethical way to eliminate a broader range of judgmental trade-offs in the formulation of social policy. The schema shown in Figure 3 forces recognition that not all benefits and costs can be measured in quantitative terms. Analysts state this as fact, but then go on to construct formulas which exclude qualitative (or "intangible") categories of program effects.

Figure 6

Factors to be Considered in Computing Cost-Effectiveness



	Monetary	Other Tangibles (Quantified)	Intangibles (Non-Quantifiable)
Effectiveness	(1)	(3)	(5)
Cost	(2)	(4)	(6)

Benefit
Cost
Traditional CEA Ratio

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[1] Indirect monetary benefits might accrue to the public sector (e.g., funding from international donors, contingent on adoption of certain planning procedures or educational programs); or to the private sector (individuals or employers, profiting from skills supplied at public expense); or even to suppliers of services (planners, educators, professional associations, whose income derives from providing programs and plans).

[2] Examples of non-monetary costs could include unemployment (if education favors capital-intensive infrastructure), opportunity costs (if funds are diverted to education from other uses), homogenized standards of welfare (resulting in "second-class" status for anyone at the lower end of the spectrum, and anyone relying on traditional lifestyles.)

3. Problems of Measurement

Given this basic six-cell framework for considering costs and effectiveness, some of the major issues of measuring costs in the context of educational planning can be summarized as follows.

(a) What is a cost to some is a benefit to others. The cost of educational planning, for example, constitutes the livelihood of the educational planner, and, of course, enters national income accounts. This makes a trivial difference in the case of a few planners, but not in the case of thousands of teachers in a large project. In connection with technical assistance the question often arises: what's in it for the supplier of planning services? This reflects the fact that a mixture of altruism and self-interest motivates planners, sponsors, ministries of education and teachers alike, and this must be recognized, particularly if they are expected to serve poor communities by-passed by educational opportunities in the past. Rhetoric to the contrary will not change this. To understand the situation requires recognition of the other incentives that cause official policies to be acted upon, neglected, or distorted.

(b) Some costs are "accountable," others not. Endeavors carried out in a developmental context tend to incur certain overhead costs that cannot be attributed to specific outcomes. These include start-up costs of particular institutions; administrative overhead for ad hoc contractual programs; coverage for risks; "loss leaders" to pave the way for more self-financing future endeavors; or the writing off of costs against R&D and the general enlightenment of planners elsewhere. Sometimes, cost figures do not include the implicit costs of using volunteer inputs to programs (e.g., Peace Corps inputs into host country planning efforts), or the part-time use of other agencies' facilities. These are often described instead, as "cost savings." (See, for example, Coombs and Ahmed, 1974, pp. 181ff.) Costs of technical assistance that accrue to the recipients of foreign aid are rarely calculated, although these may be quite high, given that middle-level management tends to be thinly spread in developing countries. Nor are other opportunity costs of receiving foreign aid always considered, such as servicing of long-term debt on foreign loans, operating costs and retirement benefits for new categories of staffing created by foreign-sponsored programs, cost overruns on capital projects, and the like. Determining inputed costs through shadow pricing is difficult in most developing countries where markets structures are irregular and monetary and fiscal conditions and policies unstable. Determining the appropriate discount rates to apply to loans utilized in capital projects is also difficult, and yet sensitivity analysis applied to the costs and benefits of capital projects indicates that the discount rate chosen can affect the resulting cost benefits analysis profoundly, sometimes doubling costs over long term projects.

Some costs obviously should be written off against "overhead" or otherwise excluded from inclusion in cost-effectiveness calculations of particular programs. Nevertheless, there are no universally accepted guidelines of what to include or exclude, and appropriate guidelines probably vary with specific applications of CEA. Furthermore, there is considerable room for biasing cost estimates for or against a project, depending on the analyst's willingness to acknowledge a wide variety of indirect costs or to exclude these from consideration.

(c) There is a bias toward overhead. Given that "shart-up" costs of projects (including R&D) can usually be justified as separate from the operating and capital costs of on-going programs, there is sometimes a detectable bias toward innovations, new starts, institution-building, and research components in programs subject to cost-effectiveness review. Often this overhead is appropriate and manifestly productive. In some cases, however, the high expense of a program is rationalized on grounds that the program is "new" and must be tested out. Meanwhile, alongside the "innovations" there might be found well-established programs geared toward the same objectives, providing outputs at cheaper cost per unit. Yet cost-effectiveness comparisons between the old and new can be glibly dismissed on grounds that the new program, being "experimental," warrants the extra cost.

Leaving aside now the question of costs, we can turn to the issue of effectiveness: what dimensions of effectiveness apply to educational planning, and how are these to be measured?

(a) Primary, secondary, and tertiary impacts. Educational planning makes its impact through an extended chain of events. In evaluating the effectiveness of educational plans, major attention is given to primary impacts - those that are short-term and measurable. In this process, other less immediate impacts may be ignored. Even though recognized as significant, they are denied a place in systematic analysis because they call for conjecture and knowledge of local circumstance that analytical specialists often lack.

Secondary impacts refer to program costs and benefits which accrue to populations outside the target group as well as effects not explicitly weighed in the policy calculus. Examples are benefits to teachers and purveyors of educational equipment; consumption benefits or disbenefits to children; custodial functions of schooling for children and otherwise unemployed adults; social status conferred by a diploma; provision of a social sorting mechanism; possible displacement of other traditional forms of education provided by family, religion, and work place.

Tertiary impacts are those which affect the decision-making processes themselves. Both the act of planning and the resulting outcomes may shift the relative power of different groups. The process itself may legitimize values not previously taken into account, change perceptions of reality, or affect the availability of resources to take action. Previously disenfranchised groups may become more active in politics. For example, self-help education in Kenya was stimulated through indigenous efforts to find alternatives to colonial government and missionary schools in the movement toward independence. Reforms create new institutions and new forms of vested interest. International collaboration may create new perceptions of what is at stake in development processes or coalesce values around salient new images of what is possible, in the form of demonstration programs or reference to foreign experience.

(b) Another dimension of "effectiveness" is the possibility of diminishing the need for output. Traditionally, planning takes the demand for services as an exogenously determined variable, the problem being one of maximizing supply. In many fields, however, controlling demand is an object of policy: highway planners, frustrated by the self-defeating tendency of new roads to generate their own demand, are rephrasing the question of cost-effectiveness - no longer asking how to maximize traffic flow but how to reduce the public's need for this mode of travel.

Similarly, agricultural research is increasingly concerned with ways to minimize the need for pesticides and fertilizers, even while giving them full credit for the Green Revolution. Energy planners are also turning to conservation measures, abandoning the previously single-minded concern with augmentation of supplies. In education, systematic policies to "conserve" requirements for schooling are rarely articulated or carried out (China's policies during the Cultural Revolution being a major exception). Substitutes for formal schooling have proven feasible on a large scale, but they generally derive from the politics of last resort. Nonformal education, for example, is usually seen as a poor man's alternative to the standards of schooling set by yesterday's elites, modeled after the experience of the Aklantic Rim countries. Similarly, massive restructuring of production processes to accommodate existing skills has been carried out with success in the United States - but only as a temporary expedient of converting to a wartime economy in the early forties.

At the same time, the missionaries of deschooling should recognize the reality of poor people's aspirations for formal education. However unless the ornamentation may be and however it was originally engendered by outsiders, the aspiration is a psychic reality and a powerful one. There is an inherent weakness in the position of a new group of outsiders, who themselves possess high levels of attainment of formal schooling, preaching the need for poor people to limit opportunity in formal education for their children.

(c) Outputs versus outcomes[1]

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[1] This section is based on a paper prepared by Guy Benveniste, "Caveats Regarding the Application of Cost-Effectiveness Indicators." University of California at Berkeley. Mimeo. 1975.

Outcomes are the consequences of outputs. Outputs are the products of organizational intentions, whereas outcomes are the consequences of these outputs interacting with the environment, sometimes in unintended ways.

Outputs are not synonymous with official goals. One goal may be to advance knowledge, and the output is a flow of students and a list of publications. Yet there is always a direct relation between official outputs of an organization and announced goals. These goals provide the rationale for actions and the justification for official outputs. When we think about an organization - say, a school system - we quickly realize that in addition to pursuing a set of goals which may or may not be explicit, the organization fulfills other social needs which are not necessarily included among the official goals. No one tells us that the goal of the school system is to provide agreeable employment for teachers, because no one thinks this is an attractive way to describe a school system. Yet it is a fact that school systems do provide agreeable employment opportunities. No one says that the goal of the school system is to provide a supervised watch for children - a parking function - yet schools do, in fact, provide such supervised guard during school hours. In other words, while organizations pursue official goals, they also fulfill other social needs which may be quite important, even if these functions are not part of the official goals pursued.

Now, therefore, we have to ask ourselves to what extent our concern with official goals of university networks eliminates other social functions of these networks which have nothing to do with knowledge generation but are important.

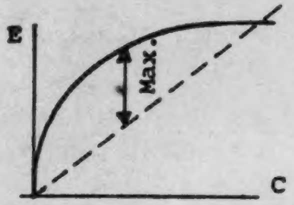
For example, international networks provide opportunities for researchers to travel abroad and work in different environments - this may benefit their mental health, enrich their environmental stimuli, and thus increase their creative ability. Yet we may disregard such needs and benefits by limiting our choice of indicators to those linked to official goals. In other words, had we formulated the problem as one of mental health and had we decided that the mental health of professors was a bona fide concern, we would have selected different indicators to guide policy choices. Obviously, donor agencies and host governments are not officially mandated to upgrade the quality of world tourism or to pursue objectives that may appear frivolous.

Unfortunately, it is not as simple as all that. Frivolous objectives are pursued because people have a vested interest in them. It may be more useful to recognize these secondary functions instead of acting as if they did not exist. Anyone familiar with government or the world of education knows that hidden causes have more influence on what goes on than will be admitted. At times it is preferable to recognize what is pursued in reality and to say so: The reason why disclosure of this kind can be important is that the decisions made will reflect real needs, even if they do not form part of official goals. The more these true motives are hidden or dissimulated, the more alienation will be generated, since it is clear that what is said and what is done are not the same. Cynicism is often the result of too large a discrepancy between the ideal and reality. When it is impossible to measure or even discuss such other vital outputs, it may be preferable not to measure anything. At least the discrepancy between the stated ideal and the reality will be less obvious.

4. More Fundamental Problems of the Cost-Effectiveness Approach

In its most basic form cost-effectiveness calculations pose the situation shown in Figure B, with costs shown along the horizontal axis and effectiveness on the vertical. At any point above the 45° line, effectiveness is greater than costs, although the graph also shows that beyond the point of maximum efficiency there may be rapidly dimishing returns to scale.

Figure 7. Cost-Effectiveness: Basic Form



When we observe educational planners in action, however, we rarely observe them making many decisions on this basis. Nor do we see sponsors of planning using CEA in these ways. Why? Some of the practical and theoretical problems of undertaking CEA have already been mentioned.

(a) Existence of multiple objectives and multiple categories of cost, irreducible to a simple ratio. (See earlier discussion of the six-cell matrix, which suggested the need for focus on such things as non-quantified objectives and non-monetary cost.)

(b) Policy choices rarely lie along a smooth curve such as that depicted in Figure B. Choices are usually found in "lumpy" packages comprising a new discrete options.

(c) Apart from multiple objectives, there are multiple publics, and the scale of effectiveness will vary according to the way different groups value specific outcomes or feel their effects (see Chapter II).

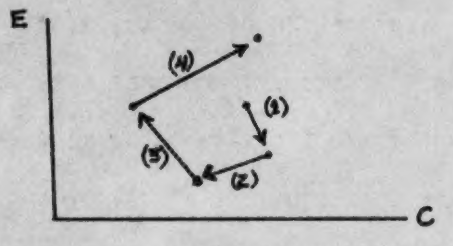
(d) Relationships posited by the cost-effectiveness curve may hold for some situations but not others. Typically such curves are derived from aggregating experience under a wide variety of conditions, statistically controlled to eliminate the effect of "extraneous" variables. Yet when the aggregate relationship is reapplied to a new situation, the old calibration will again be insensitive to the strength of contextual variables in the new locale. The relationship must then be recalibrated; but if this is the case, the original curve based on aggregate, controlled data does not represent a trustworthy standard of cost-effective relationships.

(e) Highly sophistically analytical techniques that attempt to overcome all these problems can result in a loss of the "big picture" or a retreat from intuitive insight, political realities, value implications, and other judgmental bases needed for wise planning.

5. A "Compass" Approach to Cost-Effectiveness Analysis

Given the problems described above, how can we describe a heuristic for decision making that keeps judgment constantly in play, while still focusing on the relation between costs and effectiveness among policy alternatives? Observation of educational planning and attempts to evaluate a range of network strategies serving educational planning, suggest that cost-effectiveness analysis makes most sense in the pair-wise comparison of discrete alternatives. This does not call for absolute measures of effectiveness but only general, judgmental evaluations of how particular programs stand in relation to each other and other options. In effect, the direction and general magnitude of differences between real options seem more important than precise but narrowly focused calculations of aggregate relationships between costs and effectiveness. The appropriate schema then takes on the look of Figure 8.

Figure 8. Cost-Effectiveness. The Compass Approach.



For sake of illustration, consider the kind of judgments likely to be made between the discrete policy options denoted by the five points. In order to make the pair-wise comparison (1) all that is necessary to know is that change is toward the "southeast" direction, where costs (C) are increasing, while effectiveness (E) is decreasing. In case (2) toward the southwest, a cost-saving seems possible, but at great expense in program effectiveness - a case of penny-wise, pound foolish. Again, no great effort is needed to get precise figures on C and E; the choice is fairly obvious.

More obvious still is the choice in regard to the northwest decision (3). Here one can get more output for less input - not a very frequently encountered situation, but it sometimes arises. Some shoe-string programs seem to go a long way, at least by some criteria, whereas past experience with other programs can sometimes reveal expensive mistakes to avoid. Among the case studies reviewed, some have price tags that are astonishingly modest compared to other programs of similar ilk.

Only in the case of decision (4), moving northeast, would one need more precise data on the relationship between (E) and (C), which are both increasing. Yet realistically, greater precision here may not count for much: it may falsely imply a degree of knowledge that simply does not exist; or the choice might be dictated by other constraints such as cost ceilings or minimum levels of performance.[1]

In short, the application of CEA to educational planning efforts may call for a general "compass" approach as a preferred form of analysis, not only on grounds of practicality but also validity. The approach makes little claim for the comparability of policy options, except to identify alternatives whose comparability then becomes a central focus of analysis. The compass approach does not by any means exclude more precise and sophisticated analysis, but it helps keep an overall comparison of programs in view.

The compass approach has a number of salient features and requirements:

(a) It forces comparison between real alternatives rather than abstract dimensions of programs taken out of context. Among other things, this may help to provide more systematic building upon sets of "most closely comparable" programs that already exists and less mounting of new enterprises in a vacuum without reference to previous experience.

(b) Central attention turns to the identification of "most comparable" options. These may extend beyond pair-wise alternatives. Because costs and effectiveness are not limited to one or two indicators, criteria for comparison may be multiple, and the specific programs to be compared may vary at different stages of the analysis. New program designs may result from the synthesis of features from previous options that have proved strong with respect to specific effectiveness measures.

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[1] With good statistics, however, and proper use of sensitivity analysis, the planner can be more accurate about the state of his ignorance, helping decision makers to identify the range of judgment that they must then provide on their own. For a good example of this, see Arrigazzi, 1972.

(c) The search for "comparable options" requires special emphasis and may prove difficult. Planners and innovators often seem reluctant to learning from "somebody else's" experience. However inclined people may be to make generalizations about objective reality, proprietary instincts may arise in discussing their own program, which may be depicted as unique and incomparable to other experience.

(d) On the other hand, comparisons diligently sought and discussed might result in more explicit attention to the tacit beliefs, special interests, and assumptions which sometimes govern choice among programs. In particular, the search for "comparable options" forces attention to basic philosophical positions centered on such questions as: "What business are we in, after all, as providers of technical assistance?" "In whose interest are we acting?" "What incentives govern our actions?"

(e) Unlike conventional CEA, the compass approach does not comprise a fixed algorithm or set of routine, step-wise procedures. It is more like a heuristic device which is instructive by way of examples and draws heavily on skills of judgment, intuition, and concrete knowledge of specific cases. It is not meant to replace more rigorous analysis but to provide a complementary framework for judgment in weighing the multiple dimensions of costs and effectiveness.

(f) The compass approach is essentially based on comparison between case studies. It allows neither the statistical rigor of a large sample nor the depth of a single case history, but it may strike a useful compromise between these extremes. If a "compass" analysis were to draw upon participation of representatives from the programs under discussion, they might form the nucleus of a knowledge network comprised of "most comparable" options. Presumably these would provide a valid basis for sharing of experience upon which participants could collectively build, both as users and providers of knowledge.

6. Examples of the Compass Approach

Several examples of "compass-like" comparisons can be cited. Laura Kaufman (1975) reported on an ŒCD comparison between the relative costs of university degrees in Britain and France. This comparison resulted in a concise but far-reaching summary of the costs and effectiveness for each country's programs. Jacques Hallak (1972) compared four alternative strategies for eliminating educational budget deficits in Sri Lanka, weighing various degrees of financial solvency against other outcomes (social, political, and economic). Ratings of performance on each outcome were shown on a fairly rudimentary scale of "poor/fair/good/strong." More precision would probably be superfluous for this kind of analysis, however, because assessment of certain outcomes is somewhat conjectural. Further, simplicity of scale helps the several outcome variables to be simultaneously considered and weighed.

Coombs and Ahmed's case studies of nonformal education (1974) provide some good examples of a compass approach to cost-effectiveness analysis. Their cases are presented in some depth but are also grouped according to general categories such as agricultural extension, cooperative self-help programs, and integrated rural development. Comparisons of costs and performance are then made within each group. This helps to avoid the mixing of apples and oranges and juxtaposes programs which have most to learn from each other. Cost-effectiveness comparisons are particularly revealing for certain pairs or groups of programs: PACCA in Afghanistan and Puebla in Mexico; ACPO in Colombia, Gezira in the Sudan, and the Comilla project in East Pakistan. In one comparison of six rural training programs, costs per trainee were found to vary between $20 and $3,200 (see Coombs and Ahmed, 1974, page 196). In examining the difference, the more expensive program was found to have superior results on some counts but significantly poorer results on others.

The virtue of this analysis is that it reveals how misleading cost-effectiveness comparisons can be when limited to single indicators of performance. Informed judgment plays a clear and important role in weighing one dimension of effectiveness against another. In this process the analyst or decision maker needs to be able to go back to the descriptive case studies for more detail as clarification is needed to refine the estimates of cost and effectiveness. However, equally important is the simplicity of the tableau as a heuristic device for simultaneously weighing the various programs, each with their multiple costs and objectives.

If the compassing exercise indicates that costs and effectiveness simultaneously increase at the same order of magnitude in moving from one option to another, it might then be worth attempting more refined analysis of marginal differences between the alternatives. Russell Davis has taken this approach in comparing three options for improving the utilization comparing three options for improving the utilization of school facilities in El Salvador (Davis, 1971). Costs and benefits are broken down into several components, and for each of these the relative attractiveness of options A, B, and C are compared as hypotheses (see Figure 9). For some elements the relative superiority of one option

Figure 9

Illustrative Comparison Among Options A, B, C, Treated as Hypotheses

Costs	Hypotheses To Test	Important Qualifications
1. Construction	1. $C > A > B$	
2. Personnel	2.	
a. Supervision & Administration	$C > (A=B)$	
b. Instruction	$A > C > B$	
3. Materials & Equipment, etc.	3. $B > C > A$	
Benefits		
1. Hours of instruction	1. $A < (B=C)$	($B < A < C$ during harvest)
2. Characteristics of Instruction	2.	
a. Service and supply	$B < (C=A)$	
b. Student satisfaction, etc.	$C < A < B$	
3. Utilization of TV	3. $C < B < A$	
4. Future developments	4. $(C=A) < B$	
5. (Other benefits as appropriate) ___		

might be obvious enough to be taken for granted. In other cases the hypotheses might require further data to make a determination. The virtue of the method is that a summary picture is always in view, and one can work always with the best available information, no matter how exhaustive or incomplete the data at hand. This capacity to do as best you can with imperfect analysis is an important everyday need of educational planning in developing countries.

7. Other Short-Form Methods

In evaluating systems as complex as an educational planning knowledge network, it is tempting to draw on highly sophisticated methods, such as systems analysis or Planning-Programming-Budgeting Systems (PPBS) or expensive feasibility studies. Yet there is need to balance sophistication against economy and simplicity of method. The power of benefit-cost and cost-effectiveness analysis is their ability to reduce complex relationships to a single ratio for comparing alternatives, accompanied, of course, by appropriate qualifiers. Much has been written about methods at each extreme, such as PPBS and benefit-cost analysis. It is worth concluding this chapter with a brief mention of a few lesser known methods that lie in between, specifically Planning Balance Sheets, and the Logical Framework.

The planning balance sheet method offers two principal improvements on traditional cost-effectiveness analysis. First, it gives explicit recognition to the incidence of planned outcomes as they affect different groups of consumers (and suppliers) of services. Secondly, it considers multiple objectives - not just those expressed in the monetized gains and losses covered by benefit-cost analysis, but tangible measures of impacts and also intangible outcomes (non-quantifiable program impacts). The pioneers in this methodology have been Nathaniel Lichfield (1970) and Morris Hill (1968, 1973). Hill, whose version is called the Goals-Achievement Matrix, gives more emphasis to quantitative weighting of objectives (along one dimension of the matrix) and of different interest groups (along the other). He also uses quantified measures of achievement within the matrix cells, all with an eye to use of computers and optimization techniques. Lichfield has considered but largely discarded this more mathematical treatment. Whereas Hill emphasizes the importance of an external framework of goals for evaluation of alternative plans, Lichfield is more concerned with letting some of the intangible impacts - for example, the unique and intrinsic value of historical institutions - speak for themselves. He is not convinced that everything must be rationalized in terms of a priori objectives. He is less willing to reduce things to an objective function; he is more concerned with rendering consequences in their own intrinsic dimensionality, and keeping the door open to reformulations of constraints and the redesign of options.

In foregoing weighting schemes, Lichfield seeks to keep the analysis transparent and open to discussion by the general public. He also emphasizes the importance of keeping the design of options flexible, so that the alternatives might be improved or amalgamated in the course of evaluation. In both respects, Lichfield's version of the planning balance sheet represents an example of "formative" evaluation (concerned with improvements of programs while they are still fluid, and the creation of new options), while the Goals-Achievement Matrix is more concerned with "summative" evaluation (used to appraise programs whose design and outcomes are fairly well stabilized).

It might be argued that Hill's proposal for greater sophistication in the use of weighting schemes and optimization routines will only tend to increase the gap between the state of the art and the state of feasible current practice.

On the other hand, weighting schemes have several advantages. They make explicit a kind of judgment that most decision makers have to make in any case, but usually keep implicit. Quantitative analysis also puts pressure on program administrators and designers to be explicit about performance indicators (see earlier discussion in Chapter II). Finally, an explicit weighting scheme is amenable to sensitivity analysis, which can help reveal just what effect the choice of weights will have on the overall valuation of alternative plans. Contingency analysis and _a fortiori_ analysis are also useful for testing whether alternative assumptions have a critical bearing or not upon the final ranking among alternative plans (Fisher, 1971).

The Logical Framework approach to program design and evaluation has several features in common with the planning balance sheet. It emphasizes simplicity, and it employes a matrix to help keep important variables and relationships concisely and clearly in view. It also seeks to accommodate multiple viewpoints, but in a different way than the balance sheet method. It does not devote separate columns to distinct objectives, as the balance sheet does, nor does it list the multiple publics (consumer and supplier groups) in the rows. It begins instead with a single _goal_ statement in the first row, which is successively reduced on the vertical dimension of the matrix to program purposes, outputs, and _inputs_. This four-stage analysis is given the acronym GPOI, and constitutes the "vertical logic" of the framework. To this extent it follows the general pattern of programming-by-objectives found in other methodologies such as PPBS, zero-based budgeting, systems analysis, and MBO (Management By Objectives).

The Logical Framework is a 4 by 4 matrix. The "horizontal logic" deals with different aspects of _verifying_ intentions and accomplishments with respect to the goals, purposes, inputs and outputs, and establishing the nature of linkages between each of these GPOI elements and the next. The first column of the matrix calls for a "narrative summary" of the GPOI; the second for "objectively verified indicators" of project performance (multiple indicators, not necessarily quantified); the third for "means of verification" (specific mechanisms for data collection, and agencies responsible); and the fourth for "important assumptions" (exogenous factors making project success uncertain and needing continual surveillance).[1]

As implied by the nature of the horizontal and vertical matrix categories, the various links from project inputs to ultimate goal fulfillment (the G-P-O-I sequence) are seen as problematic, and they are treated as development hypotheses for examination throughout the life of the project. Attention is focused on questions of whether the links are plausible, and whether they are necessary and sufficient to achieve the results sought. The Logical Framework addresses projects as experiments, calling for more creativity, initiative, and responsive learning than most other conventional forms of project evaluation. This makes it especially valuable for application to the problem of educational planning knowledge networks, a field in which there is still a great deal to be learned.

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[1] For a fuller description of the Logical Framework method and philosophy, see Practical Concepts Incorporated (1974) Practical Concepts for Research Management and Evaluation. 2nd Edition. Washington, DC: PCI.

CHAPTER VI

PLANNING METHOD AND EDUCATIONAL SUBSTANCE

1. Economists and Educators: Two World Views For Knowledge Networks

The knowledge base for educational planning was described earlier in Chapter II, but without mention of an important related problem that will now be addressed. Analysts are becoming increasingly aware of disparities between the kinds of information and models used in educational planning and the nature of the underlying educational processes themselves. The former generally deal with optimization procedures for resource allocation, often borrowed from theories of the firm, or based on the behavior of larger economic systems. The latter generally deal with the learning behavior of individuals and groups. Learning behavior and economic optimization have certain things in common, but there are also major divergencies between their respective premises of rationality. Learning is based on viewing the world as problematic and on adapting systems from one form of behavior to another, as described in the logic of human psychology and sociology. Planning is based on other principles: the logic of mathematical optimization, statistical principles for endowing relationships with "significance," and a strictly functional or instrumental economic rationale for action.

The basic difference between these two modes of thoughts is one of epistemology, or theory of knowledge, especially in relation to its grounds for validity and its limits. To be sure, there are other points of difference as well: the attitudes and biases of professional disciplines (educators versus planners); and the knowledge bases which they draw upon for their respective roles. The issue of epistemology is more fundamental, however, and this is the issue to be addressed in the present chapter.

It is perhaps improper to label the difference as one between planners and educators. Good educators plan, and good planners educate. Effective planning involves teaching and learning, just as effective education requires thinking ahead and preparing for contingencies. It is better, then, to label the difference as one between theories of method and theories of substance, method referring to educational planning models and related economic and statistical analysis, substance referring to explanation of human and social processes involved in educational activities.

The gap between the methodological and substantive bases of planning theory has been recognized as a problem among development planners generally. For example, it was a major issue raised at a conference of planners convened by the Institute of Development Studies at the University of Sussex in 1969 (Faber and Seers, 1972). Since then, the problem has been better defined within the more specific context of educational planning. There has also developed a greater recognition that the issue goes deeper than system design or project management or validation of particular planning models. The basic issue concerns epistemological differences between theories of methodology and substance.

As yet, there is no clear view of how to reconcile the differences. There is even uncertainty about the nature of the disparities, as to whether they can be resolved through better theoretical synthesis, or whether each demands its own intellectual allegiance, with no possible resolution of tension between the divergent paradigms. The intention of this chapter is not to draw any conclusions on this point, but to clarify the nature of the differences between methodological and substantive theories. The discussion is aimed at showing how knowledge networks might serve either to widen or close the gap between theories and methods. This issue will be approached on two levels: first, a descriptive list of selected theories from each of the two schools of thought, to exemplify the nature of differences; and second, a case study of an educational program, whose interpretation from each of the two theoretical standpoints can help reveal the practical policy implications that stem from choice between one epistemological base and the other.

2. Theories of Method and Theories of Substance

Theories of _method_ are concerned with means of analysis, usually reduced to formal algorithms, together with their associated application to educational systems. Theories of _substance_ deal with observation and explanation of social phenomena, and serve to orient the planner to the importance of individual attitudes and values, the subtleties of group dynamics, and the general characteristics of educational processes and outcomes that are lumped under the catch-all term "quality."

The two types of theory have different implications for knowledge networks. Planning theory associated with theories of method tends to follow the procedures of "synoptic" or "rational comprehensive" planning, involving systematic identification of goals, program alternatives, projections of needs and resources, and least-cost strategies of overcoming foreseeable gaps. Critics of rational planning often claim that this systematic approach forces rigidity and limits the analysis of real life social situations. Alternative planning approaches have evolved in search of stronger focus on substantive dimensions of the social setting: included here are transactive planning, incremental planning, creative planning, participatory and advocacy planning, and radical planning (Hudson, 1979).

The knowledge base for each of these approaches differs accordingly. Rational comprehensive planning, associated with theories of method, emphasizes a knowledge base which is robust (i.e., valid for a variety of social settings), streamlined (reduced to a minimal number of key variables, including operational objectives, resources, and policy constraints), technical in character, and quantitative in expression of relationships. The alternative approach, associated with theories of substance, given more emphasis to data which is rich, situational and contextual; less geared to apriori categories; more focused on social and qualitative relationship than technical and quantitative ones; and more concerned with the variations and complexities of learnig processes both on the level of individuals and institutions. These differences become clearer in the context of specific examples. Illustrative theories of method and substance are listed and compared, in the following paragraphs.

Theories of method tend to address two distinct issues: planning model formats, and model calibration. In the case of model formats, the major concern is depicting the system to be analysis, the reperable sub-systems, and the general nature of inter-renationships. In the case of calibration, the analytical emphasis turns to estimating the strength of relationships previously specified. Illustrative theories of method include the following:

Systems models. Educational systems and flows. Examples: Markov matrices depicting student flows from one level or program to another; flows of graduates into manpower stocks; flows of funds, information, support services, supervision and other resources into educational activities.

Programming models. Optimization algorithms, as in linear programming and quadratic programming. Usually involves an objective function (targets, resources) and constraint functions.

Sets of Equations. Examples: production functions, other recursive or non-recursive systems of equations that show linkages of key variables.

Decision models. Examples: decision trees; expected value analysis, risk analysis.

Simulation models. Like methods listed above, but generally used as a "heuristic" rather than "algorithm", i.e., a device to learn about the nature of a system and influence of variables, but not to establish a single optimal solution.

Continuing this list, the methods below refer to calibration of models, whose format has been previously defined:

Observation, measurement, enumeration. This is the most basic (but by no means simplest) approach to development of quantitative values and relationships for systems models. Examples: census and survey data collection; inventories of educational service needs and capacities.

Development of indices and indicators, and related calculations. Examples: benefit-cost and cost-effectiveness analysis; program budgeting.

Projections. Demographic projections, economic projections, educational output projections; also projected changes in trends as a result of possible policy interventions.

Analysis of relationships. Estimation of parameter values in equations or systems of equations; testing significance of relationships shown; isolation of causal relationships from statistical associations; proper identification of population sample. Main forms of analysis: regression analysis and other least-squares methods, including correlation, path analysis, analysis of variance and variation.

Two topics in this list will be addressed later in greater detail - regression analysis and manpower analysis - because these illustrate well the general nature of conflicts that arise between theories of method and theories of substance. First, however, the nature of substantive theories in educational planning can be clarified by the following illustrations.

Theories of learning and human development. Examples relevant to education planning include stimulus-response models, conditioning theory, Hullian models. (For planning on a systems level, beyond the individual student or classroom, such theories generally refer to "low-level" mechanistic aspects of cognition and behavior - such as response association, discrimination, ordering - but not to higher-level learning such as transfer and generalization, divergent and creative thinking, or problem solving. Some theories can be applied only in special circumstances where they are socially and politically acceptable, such as theories of aspiration and achievement motivation, social and group learning, individual differences, race, caste, and class differences.)

Pedagogical theories. Examples: Piaget, Montessori, Bruner, Freire, Pestalozzi. Also, taxonomies of learning outcomes (Bloom, Gagne, Whol, Rath, Steinaker-Bell.)

Social theory. Parsons, Allport, Maslow, Lewis, others. Concerns include attitudes, norms, role acquisition, group membership and behavior, both internal to the education process and in the way students adapt education to the external social environment. Also includes learning and adaption process in society at large. Another branch of this field deals with organizational theory, both in explaining educational systems, and prescribing improvements.

Economic theory directly related to educational systems. Classic concepts or marginal analysis, marginal productivity; supply and demand, market processes; rate of return, residual factors in production. These notions provide the theoretical basis for cost-benefit and manpower analysis, as well as for the theory of human capital, and the analysis of educational production functions.

Economic development as relates to education. Higgins, Lewis, Domar, Mydahl, Currie. Historically, this field provided a major impetus for educational planning in the context of national economic and social development planning, often in association with programming of technical assistance.

Other economic paradigms. Examples include work on segmented labor markets (Piore, Doerringer); and Marxist analysis, which focuses on social class as a variable (Sweezy, Gordon, Gintis, Bowles)

Political theory, especially related to developmental settings. Part of this theory applies to analysis of the national level (Pie, Verba, Coleman, Apter), part to the organizational level (Riggs, Levy).

> Cultural development, (ethnography, linguistics). Included here are general writings on culture, personality and society (Mead, Malinowsky, Whorf), on learning (Whitings, Curle, Wright, INCAP), and on development (Curle, Maybery-lewis, Banfield).

Conflicts between theories of method (I) and theories of substance (II) arise for a variety of reasons:

- shortcomings within each kind of theory, for example lack of flexibility in theories of method (I) and inconsistencies and ambiguities in theories of substance (II);
- irrelevance of (I) not directly available for situations covered by (II);
- information base necessary to validate (II) not amenable to treatment under (I);
- basic epistemological contradiction between (I) and (II);
- basic psychological differences between people who are competnet and interested in (I) and (II);
- social/political situations that creat ambiguities between (I) and (II);
- lack of overlap between (I) and (II) in central concepts, constructs, terms, and definitions.

Rather than continue listing presumed problems it is probably more useful to give some examples of theory disparities in two areas of central concern for educational planning: manpower requirements and regression analysis.

Manpower models and analysis methods have widespread application in developing countries, and represent one of the most familiar types of long-range rational comprehensive planning. Manpower planning is a good example of "successful" world-wide diffusion of a methodological approach, over the last two decades. Problems in applying manpower analysis have been widely reported (see Middleton and Hudson, 1977), but it is necessary to distinguish between two types of problems that have arisen. One type is curable in principle, and reflects difficulties of insufficient data, ill-experienced methodologists, poor choice of method for a given situation, over-ambitious scope of model application, failure to qualify findings through simultaneous application of complementary techniques (sensitivity analysis, bottleneck diagnosis, benefit-cost estimates); or simply weak follow-through from analysis to policy implementation. In most cases these problems heal themselves over time with the accumulation of skills, experience, data and planning resources, and better coordination of planning efforts with on-going budgeting, administration and decision-making.

The other kind of problem arising in manpower analysis is more fundamental, and relates directly to the conflict between manpower analysis, as a theory of _method_, and the other epistemic foundation of planning - the theories of _substance_. Important disparities that arise between this methodological approach and substantive theories of educational, social, and economic development can be briefly listed as follows.

> _Lack of fit_ between the methodology of manpower planning (target-setting and overcoming gaps) and the basic economic theory of educational programming (based on marginality analysis aimed at maximizing the productivity of marginal resources). The problem appears starkly in so-called educational production function analysis applied through regression (as in Cobb-Douglass form) where there are conflicts between theory and reality and also shortcomings in the mathematical model underlying the method. The same problem is less apparent but equally real when the marginal assumption underlies the model for applications of rate of return, cost-benefits (applied in some analyses) and manpower requirements approaches.
>
> _Unrealistic assumptions_ required by manpower analysis, particularly the assumed lack of substitutibility between occupational and educational classes.

Failure to incorporate cost-benefit signals or other supply-demand signals into the analysis (a potentially serious shortcoming where major differences occur among supply and demand elasticities on various manpower categories.)

Lack of systematic procedures for incorporating substantive theory, in regard to (a) students (aspirations, role acquisition, short-cut learning potential; (b) labor markets (segmentation, geographic shifts, role of the informal sector, inflation of credentialism); (c) production process (potential for on-the-job learning, labor-capital substitution elasticities, requirements for social skills other than manual and cognitive achievements); and (d) political and cultural processes (creation of employment to suit existing skills, for example para-professional categories, public works programs, cooperative institutions, uses of appropriate technology).

Lack of focus on key issues of current development theory. Manpower analysis traditionally focuses on high level skills in the modern sector, ignoring rural and traditional skills; it emphasizes industrial rather than agricultural sector problems; investment and output maximization rather than employment maximization; economic efficiency rather than social equity; gross production targets rather than satisfaction of basic needs; growth of exports rather than reduction of dependence on modern consumption goods and unstable world economic linkages; economic rather than cultural and social development; and maximization of the supply of formal education services rather than minimizing the effective need for these services.

This list of disparities between manpower analysis and substantive theories of education and development could be extended. It is true that the state of the art is moving to overcome some of these gaps, for example in adapting economic production systems to existing stocks of skills rather than the usual practice of transforming people to fit the job market. Nevertheless, the task of bringing methodological theories of manpower analysis closer to substantive theories of education and development will require an effort of the same magnitude now being spent on manpower analysis itself. A special commitment to this effort will be required, insofar as it goes against the grain of conventional analysis. Morover, it will require more than a one-shot effort, but a continued dialogue between theorists of method and theorists of substance in the field of educational planning.

The challenge for knowledge networks is to find ways of generating, transmitting and implementing knowledge in this synthesized form. The division of knowledge between method and substance derives in part from the very fact that knowledge networks have traditionally specialized in one type of theory or the other. Just as they have helped to create and perpetuate the division, knowledge networks now face the task of overcoming this state of divided mentality on educational planning. If this mission is carried out piecemeal, efforts to close some gaps will probably be washed out by the re-creation of new gaps elsewhere. In this case, the problem needs to be treated systematically as a whole, by incorporating more standard procedures for confronting theories, issues, and procedures of method with those of substance.

It yet remains to be seen whether this synthesis is possible. As already suggested, the partition of theory between method and substance may be grounded in epistemological differences that run so deep that the two can only be bridged in exceptional cases, or in the context of concrete planning practices. Presently, it can only be said that the problem deserves special attention in the design of knowledge network strategies.

Turning now from manpower analysis, to regression analysis, one can trace similar disparities between method and substance. There are several problems of regression analysis which are well recognized within the method itself.[1] Nevertheless, the issue here concerns the contradictions between the kind of world posited by the *method* - at its best - and the kind of world described by *substantive* theories of education and development. These differences are crucial because the ultimate basis for interpretation of data (especially in distinguishing causality from association) and the main criteria for research design are grounded in the theoretical plausibility of relationships posited. For that matter, the accepted plausibility of any one theory over its rivals is the ultimate grounds of truth in any scientific "proof," and not statistical significance (see, for example, Kuhn, 1969).

Major differences between the theory of method underlying regression analysis (RA) and the theories of substance applying to education and development (ED) can be illustrated by the following points.

RA posits learning outcomes related to educational inputs in the form of a continuous relationship. Much ED theory, however, describes development as a discontinuous process, marked by successive spurts and plateaus, whether one refers to learning on the part of the individual or development in an organization, social movement, or economic region.

RA posits relationships in the form of a stable "production function" linking inputs to outputs. ED theory, however, often specifies "development" as a process in which the production process itself is transformed over time. For example, the mode of learning may shift from rote instruction to problem solving; control over learning resources may shift from the teacher to the student; the role of peers may shift either to thwart or enhance learning, depending on the thrust of educational policy toward individualism (competition, personal mobility) or toward group consciousness (cooperativism, community identity).

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[1] These intrinsic methodological problems of regression analysis include such things as *multi-collinearity*, among variables (yielding ambiguous estimates of "true cause"); *serial autocorrelation* (of a variable with itself); *interaction effects* and *non-linearity* (sometimes correctable by appropriate transformation of variables, but not in the case of "threshold" effects); *non-recursive* relationships (i.e. two-way causality); *excluded variables*; *sampling* (especially in the choice between "representative" and "maximum-effect" or "experimental" samples); *heteroscedasticity* (changes in error variance over the range of a variable); lack of distinction between variables which function as *stocks* (continuous effect over time) and *flows* (impermanent); typically low R^2 (low proportion of variance explained); *research design* (especially in the use of cross-sectional data to approximate longitudinal processes). See Campbell and Stanley, 1963; Luecke and McGinn, 1975.

RA relies on large samples in order to establish statistically significant results. ED theory suggests that in such samples, important individual differences will be ignored, distorting or concealing real relationships behind the veil of synthetic averages.

RA relies on relationships that can be specified by quantitative indicators (or reduced to binary dummy variables). ED theory treats many qualitative factors which cannot be handled this way in most circumstances: higher order learning outcomes; the motivational power of teachers and community leaders; historical events and circumstances; and the constraints and opportunities of behavior stemming from culture.

RA takes for granted the need to define relationships in terms of proxy variables; ED theory, on the other hand, gives more central attention to the validity of alternative measures of a given phenomenon, and the limits of measurement.

RA is generally contrained to a single level or unit of anlaysis (students, schools teachers, regions). A major concern of current ED theory, on the other hand, is the simultaneous analysis of congruence or misfit between development potentials at different levels - ranging from the individual and group to the community and region. (This reflects the influence of concepts from systems analysis, human ecology, and structuralism. It also reflects the intent of educational "sector analysis," which addresses educational problems and opportunities in the context of national policies rather than traditionally bounded "projects" and "programs".)

Because it deals with empirical aggregates, RA is descriptive of situations that already exist. Variations from the norm are not but no special attention is given to particular instances of unusually successful "outlier" cases from the overall sample. ED gives specific attention to outlier, which reveal (a) particular combinations of explanatory variables department from the norm to produce success, and (b) other explanatory factors which may have accounted for success that were not included in the RA, such as attitudes, cultural and ethnographic influences on family roles in childrens' learning, group behavior in the school and community, group roles, membership and solidarity, effectiveness of policy implementation devices, historical events affecting the general level of social mobilization and saliency of educational contributions; and sense of effectiveness among learners. In rare cases, RA includes variables relating to the environmental factors affecting learning outcomes, but is biased against showing their strength by reliance on quantitative proxies of complex qualitative process,

> by the use of narrow outcome measures (usually cognitive achievement), and by the focus on a synthetic aggregate of learning behavior rather than a subsample of particularly successful cases. In all these respects, RA is inherently limited in dealing with key educational issues addressed by substantive theory.
>
> Because it deals with large samples, RA generally defines educational programs in terms of the labels given them. Substantive theory, on the other hand, gives attention to discrepancies between the labels and the reality. For example, substantive theory, in its concern with policy and program implementation, recognizes that many "innovations" are implemented in name only, without any real difference in classroom procedures; "sixth grade" classes in some schools are recognized as equivalent to fifth or fourth grade classes elsewhere; textbooks "used" in a school are recognized as stored safely away out of the hands of children; "team teaching" in some settings is found to consist of merely using substitute teachers, without any of the pedogogical, technical, organizational or group dynamics procedures that team teaching otherwise denotes. A large part of substantive educational theory (ED) deals with the fit and misfit between labels and reality, while this concern is generally outside the purview of methodological theory (such as RA) in educational planning.

Interim conclusion. The disparities between theories of method and theories of substance could be examined in a number of other fields of educational planning, but the two examples already given - manpower planning and regression analysis - go far enough in illustrating the general problem to indicate the challenge posed for design of knowledge networks.

As already suggested, the depth and quality of contradictions within this type of conflict are not understood well enough to pass judgment on validity and transferability of manpower planning or regression analysis. Nevertheless, the issue has emerged as a central one in the field of educational planning, and its implications for knowledge networks should also be apparent. The issue concerns the basic consistency or inconsistency between one body of knowledge and another, one mode of understanding and another, one view of a problem and another, one knowledge user and another. Unless this kind of fit or misfit between theories can be better understood, the development, transmission and utilization of educational planning theory through knowledge networks will be operating without clear definition of the limits of its own validity. Consequently it will be unresponsive to the need for adapting methods to a substantive context. In international knowledge networks, the problem of transfering knowledge from one culture to another is well recognized. What also needs to be recognized is the more fundamental problem of fitting any methodological form of understanding to any cultural form of understanding, or any theory of method to any theory of substance.

3. Two Interpretations of a Case Study: The Calcutta Youth Self-Employment Center

The Calcutta Youth Self-Employment Center, CYSEC, trains young men for self-employment and the entrepreneurial development of their own business enterprises. Founded in December 1970 by a group of Calcutta businessmen, bankers and social organizers, it is registered as a non-profit enterprise. The constitution of CYSEC states the principal objectives of the organization: (a) to train young educated men and women in productive enterprises; (b) to assist them in drawing up economically viable business schemes; (c) to assist them in getting bank loans to found and start-up their business; and (d) to help them identify and arrange markets for their services and production.

By 1973 CYSEC had trained about 150 young men in 12 different production or service fields and helped about 50 of them to set up partnerships in 14 small industries and service enterprises in Calcutta. By 1974 the number of businesses set up under CYSEC had grown to 40, with 3 more beginning, and 8 schemes approved and awaiting financing. A women's business section had been added and five schemes were waiting financing. The program, which had originally served mainly educated young men from the middle classes, had set up four urban training sites to serve young men of the Calcutta bustees (slums), and two rural sites in areas surrounding greater Calcutta.

The numbers served, although impressive given the difficulty of accomplishing anything in the deep poverty and chaos of Calcutta, are still relatively insignificant when compared to the staggering figures of unemployment in Bengal. In 1972 it was stated that 3 million young people were registered with the employment office of West Bengal, and over half of the number had completed secondary schooling or above. It was also estimated variously that from 4,000 to 10,000 trained engineers were unemployed in Greater Calcutta. Clearly Calcutta had a problem not only of massive unemployment, but also of massive unemployment of educated young people, and against this background, fifty small businesses employing somewhat over a hundred young entrepreneurs does not seem a major response to the problem. Yet it is a response that has several features worth noting, and CYSEC had developed into a model that caught the attention of educators, government officials, industrialists, and development assistance agencies within and outside West Bengal and India. Visitors were coming into Calcutta to look at CYSEC, and the model was being modified and extended for application in other areas.

The significance of CYSEC must be seen, then, in its potential for growth, spread to other regions, and adaptation to other local conditions. This is the classic problem which faces highly imaginative, indiginous education programs all over the world. They deal with social problems close up. Their relevance to economic development is direct and unmistakable. Their ability to reach deeply impoverished communities makes them deserving models for similar but less successful efforts elsewhere.

All this leads directly to the issue of knowledge networks. Repeating a point made several times in earlier chapters, a major function of knowledge networks is to take experience and understanding which is valid, fresh and detailed, and to work this into a more comprehensive and systematic federation of planning efforts, so that initiatives do not remain isolated, fragmented and small scale, as they were in the days of the early missionaries. (See especially Chapter I, Part 2.)

Background to CYSEC

Events which furnish the original impetus for establishing CYSEC are significant in describing the context in which the organization began and developed. CYSEC began as a voluntary effort, created and sustained in the early and lean days by what might at first seem an unlikely group from the standpoint of social responsiveness, the business and banking elites of Calcutta. In the foreground there was the violence of the Naxalite *dies irae*, which in Calcutta were staged by an urban guerilla wing of the Naxalite movement. This splintery Marxist Maoist group drew its street troops from the educated middle class youth of Bengal, the *badhra lok*, alienated not only from the political and economic life of their fathers who ruled, but deeply hostile to the high culture and deep roots of Bengali traditions. The rural wing, perhaps the stronger proletariat component of the Naxalite movement, was based in and around the tea plantation area of Maxalbarre, from whence the name of the whole movement derived.

Businesses, whether Indian owned or Bengali run, were attacked in Calcutta, the managers harassed and sometimes beaten and killed. The motivations of the businessmen in founding a youth-directed program is fairly easy to trace, and the founders frankly owned to them. The form of their response, CYSEC, was somewhat unusual, although some might call it also predictable. Some voices were calling at the time for youth mobilization and segregation into work camps; and indeed such initiatives might have cleared the streets more effectively. Not so predictable was the preserverance of the CYSEC founders, long after the immediate threat had disappeared, for the Naxalite movement and the violence was stamped out in a few years, and most of the CYSEC development came as the movement and perceived danger waned.

The Naxalite violence was only the most dramatic feature in the background to CYSEC. There was the deeper lying malaise of the whole West Bengal economy, centered on Calcutta, once the Pearl of the Empire of the British Raj in the East. From the time when the British shifted the seat of colonial government out of Calcutta near the turn of the century, the city had been declining. Partition and Independence brought another blow to eastern India, and its one central city Calcutta, when the jute fields wound up in East Pakistan and the mills and port in Calcutta. The long strife between Pakistan and India sealed the border to trade. Few trade goods came over the line but millions of refugee Bengali Hindis came, to swell the ranks of the aspirants to education and higher level employment in Calcutta.

Bengali economists also trace the decline to Center Government policies which drained revenues and resources out of the area for investments to balance growth in other parts of India. All the while urban services and the quality of life in Calcutta declined, the port deteriorated, there were floods and droughts, famines, epidemics and wars.

In the aftermath of massive unemployment, unrest in the industries and the threat of violence hastened the flight of industry from Bengal and worsened the economic and social plight of the region around Calcutta, and added to a situation that is best depicted in the Bengali word, tamasha, a social chaos, usually festive, but not so in the grim surroundings of Calcutta.

The CYSEC Response to the Situation. CYSEC responded directly to the employment problem, although not at the level of magnitude that seemed called for. Stress on preparing young men for self-employment directly addressed the fact that there were no more jobs for young people in government or in the organized private enterprises traditionally open to educated Bengalis. The Bengalis had an early lead in education, over other parts of India, and a commanding position in civil service and government employment in the declining years of the British raj. With Independence there was more attempt to equalize these employment opportunities for Indians from other areas. Yet patterns and expectations among the badhra lok did not change all that much. Lacking job opportunities with Center and state government chores elsewhere in India the state and municipal government roles in West Bengel, and in Calcutta, became enormously swollen, so much so that efficiency was reduced and a round of harmful second order consequences propogated through the economy.

Labor unrest and inflexibility of the unions contributed to the problem. Under rigid union procedures, back up by militance and supported by government weakness, industrial managers could not shift organized workers into new jobs and new work patterns to meet new market demands and to fit new technology. Once a worker was on the payroll and assigned to a specific job and work norm he expected to stay there, until he retired, and then to force his son into his place. Rather than add workers to their own payrolls the larger and more organized industries preferred to buy from suppliers and thus let small enterprise owners or managers cope with the workers and their unions. The CYSEC stress on self-employment addressed this possibility. There were no jobs in government or large industry, and to work the young man had to create his own business. Industries preferred to buy from the small suppliers rather than hire. Bengali young men were not by custom drawn to entrepreneurial activity and risk, and hence, they had to be trained not only for skills but also for entrepreneurial activity and management. Most of all they had to be counselled and supported in the lonely life of starting a small enterprise. Evidence indicated that their preference was an educational credential which entitled them to a safe salaried job in an organized enterprise. Hence, though CYSEC responded to a background need, employment for the educated yough, it did not respond to an expressed demand by purported clients, the young men. This is one of the ironies of development enterprise, made more poignant in the case of CYSEC which later put so much stress on first assessing market demand for goods and services in small enterprises to be founded.

CYSEC also responded to the education situation of Bengal. The huge unemployment problem among educated youth has been mentioned. Yet the schools continued to churn out large numbers, trained from the highest graduate levels down through skilled workers. The employment record of education and training institutions was poor at all levels in Calcutta. The Junior Technical Schools, run by the Ministry of Education, were dying in place, and enrollment had slipped to one third of capacity in just a three year period around the time CYSEC was established. With enrollmen declines came deterioriation of plant, equipment, program and instructional staff. Training for manual skills was not popular in the culture in the first place, and it was shunned when it did not lead to the one thing it promised - a job. Polytechnics and the college and university schools of engineering were better equipped and staffed, but their employment was little better than the Junior technicals. The Industrial Training Institutes, run by the Directorate of Cottage and Small Scale Industry, conceived as an alternative to more formal schools, were themselves rigidly confined to training in set fields according to predetermined programs which prepared for jobs that did not exist. In 1972 the Ministry of Education was hoping to off-load its technical schools onto Cottage and Small Scale Industry and at the same time the CSSI was suggesting that the Ministry of Education take over the Industrial Training Institutes. Higher Education, as exemplified in Calcutta and Burdwan universities, was in turmoil, and where it functioned at all, as in Jadavpur University, the only outcome was the smooth and continued production of unemployable graduates - in all fields.

Dr. J. De, a professor of physics at Jadavpur University, who was later to influence the plans and programs of CYSEC in important new initiatives reports his own experience:

> I was a scientist and teacher, first, not an entrepreneur, but for many years, turning out brilliant boys who had no prospect for employment I was finding it discouraging, and I was dissatisfied with my work. Recently I have started an electronic industry myself with financial help from the State Bank of India. When I started manufacturing activities myself . . . we set up a number of vendors who would supply certain components to us like sheet metal casing, plastic mouldings, printed circuits and various other hardwares. I then collected a number of boys (former graduates), trained them, and in some cases helped them with necessary finances . . . My vendors have created a total employment for about 15 boys, with a per capita income of each vendor of Rs. 400 to 500 a month."

CYSEC was timely because it responded to the need for creating, rather than training for, employment; it responded in a different and more effective way than existing schools, and it fitted into existing government programs for supplying credit through state owned banks and supervision through Centre Government and State organizations charged with fostering small industry. Without existing programs for credit CYSEC could not have operated for it did not itself have any credit funds for starting off entrepreneurs after they were trained. CYSEC very early in its existence did receive some government help with a grant (about U.S. $15,000) from the Center Government Ministry of Education, then concerned about the employment record of traditional Schools and ready to support new and different training enterprises. At the time the government grant was made it was more an expression of faith in an idea than a reality, but CYSEC does, for India, represent a rather unique partnership between private voluntary initiative and government programs. CYSEC kept close to government programs and used them to supplement its own limited resources wherever possible.

Early Activities of CYSEC. In the selection of its training programs in the opening stages CYSEC showed no impressive signs of innovativeness. A group of the businessmen founders sat down and spun off some suggested activities, many connected with their own fields. From a large list of possibilities a few were selected as within the resources of the CYSEC enterprise: air conditioning and refrigeration, cement products, plumbing, tire repair and recapping, spray painting, wood projects, welding, plumbing and electrical servicing. Wheat grinding, a bakery and a piggery were other activities explored, but these were to earn revenues for CYSEC, and not primarily for training entrepreneurs. Some of the first generation selections were quite unsuccessful and were closed down or modified. For example, wood products and painting were combined into a speciality for toy making. Cement products, without a market, foundered. A paper box enterprise stumbled onto a market and prospered.

Markets were not the only problem. Social and cultural biases affected success as much as economic prospects. The urban youth showed little taste for the piggery and chicken projects, although the market was strong enough to keep the enterprise going as a CYSEC institutional for profit activity. Plumbing showed promise, but there was little taste for being what some young men may have considered a "sweeper with tools." Businesses were unsuccessful for many reasons that were neither economic nor technological. Some partnerships were successful as long as an assured supply of advanced orders was promoted by CYSEC officials; but when orders slackened the young men would not get out on the street after more, and they became discouraged. The compatability of partners was important, the best combination being an inside man with skill and interest in production and an outside man who would hustle credit and sales. Start-up and working capital was always short. One of the most significant determinants of success of partnerships was trust. This had to exist or be developed and sustained or the partnership dissolved. One weakness of the CYSEC program was that the families of the men were not centrally involved in the early months when the young men needed encouragement. Some of the bandra lok families never accepted the stigma of educating children for long hours of grinding, dirty work.

One important characteristic of CYSEC and its operations emerged early. Enterprises were tried, and if they did not succeed they were changed and dropped. This stands in contrast to the problem of rigid and inflexible commitment to staff, plant and equipment, which plagued the official education and training institutions. CYSEC was far more flexible, partly because of limits on operating funds and fixed investment and partly as a reflection of the somewhat entrepreneurial characters of the members of the Managing Committee, and particularly the dynamic leader of the Committee. CYSEC plunged into many things and succeeded in a few. The limited resources were themselves an advantage because CYSEC was forced to accept shelter in the compound of a Mission school complex in Calcutta. The Director of the School, a missionary, was a powerful support of CYSEC, precisely because his own vocational school, a well equipped and formal program in machine trades, was so unsuccessful in placing graduates. Fortunately for CYSEC the Mission vocational plant was not made available and the training activities were housed in a sprawl of small sheds, some built as temporary shelter for a specific activity. When an enterprise was closed, the machinery was taken out of the shed, new equipment put in and the sign on the door changed from Cement Products to Toy Making. There was no large investment in equipment or plant to retard a switch to a more promising line of activity. CYSEC also considered a proposal to give the training equipment to the last cycle of entrepreneurs to finish a program which was scheduled to be shut down. The notion was that this equipment would be amortized out of the earnings of the business established by the graduates. In other cases equipment could be adapted to training in different lines for the original program.

One other feature, again born in poverty, added to CYSEC flexibility, often CYSEC had to borrow the use of premises and equipment from outside enterprises. As one example, trainees in the tire and tube repair program were accommodated at the repair shops of Public Works, because CYSEC could not afford the equipment for handling large truck tires. Hence CYSEC trained in dispersed sites and within industry, not as a matter of deliberate policy to maximize the reality of the training, but because it had no resources to do otherwise. Later this was recognized as a sound policy which enhanced the attraction of the training for participants and also enabled them to make job and business contacts. This feature was incorporated as part of the program.

CYSEC also had considerable flexibility because of the nature of its training staff. Most were not trained instructors but skilled workers or businessmen who were paid a small fee for their teaching services or who gave their services in off hours. Some were recruited directly out of industries and kept on only for as long as the training program for that enterprise lasted. It was the policy of the Managing Committee to seek help from whatever sources through formal and informal contacts in the business and social development communities of Calcutta. This provided considerable coverage at reduced cost and flexibility for adaptation to changing circumstances.

The systematic costing of CYSEC inputs by analysts and planners would be a meaningless exercise, inasmuch as conventional costing would fail to capture the enormous amount of informal and voluntary effort contributed to the project. Hence, if CYSEC were to be replicated elsewhere it could not be successfully acceomplished at a fraction of the official budget because the activity consumed a vast amount of very high priced talent offered on a voluntary basis. Indeed it was this kind of activity that accounted for CYSEC success and not alone the instructional and support services of the small paid staff. This point should be noted by planners. A rough calculation suggests that if CYSEC had to pay consultant fees commensurate with worth of services rendered to the Executive Committee of the Managing Committee, which met for five hours every Sunday morning, the cost for each meeting would have equalled the entire budget of the operation for one month. The services were, of course donated, as were thousands of hours given in phone calls, business luncheons and casual meetings by the Committee members. CYSEC accepted services from everyone, including those of the writer (Russell Davis) who served as an unpaid planner in the developing stages of the project. Whatever the merits of flexibility through informality, as CYSEC grew program planning had to become more systematic, so that product and service lines would at least last through a few training cycles.

CYSEC Develops. One of the first evolutions in CYSEC was the development of new fields to replace old and failed program initiatives. Here Dr. De, the physicist turned entrepreneur, made valuable contributions. Dr. De's suggestions were to broaden CYSEC training enterprises away from small services, and to increase the emphasis on industrial production. De pointed out that there was a strong market for suppliers of industrial components, especially in the electronics field where large companies bought from suppliers and assembled the final product. De, with his knowledge of the technology and markets of the electronics industry, was able to identify a large list of items for which there was supplier demand in the market of Calcutta. He furnished one list of 26 end products: Wire Wound resistors, glass cartridge fuses, plastic and sheet metal casings, plastic knobs, fasterners of various kinds, multimeter test prods . . . He then rationalized his list of 26 items into 6 production cum training fields, such as Metal Finishing, Decorative Finish and Printed Circuitry, and Plastic Molding. He then developed a list of equipment for training and production, and introduced the notion that the training should and could be based on production carried out in support of CYSEC itself. In this way, he put CYSEC into the production business.

As CYSEC moved into more complex technology and marketing situations there was a need for doing more systematic market analysis within Calcutta industries to seek market possibilities for small suppliers. An economist was added to the CYSEC staff as a part-time analyst, to aid with these studies. Technology specialists had to be added to explain the products, rationalize the production process and develop the training programs associated. In many cases the industries were willing to aid in the effort by providing detailed descriptions of the process, quality control standards for the output, inspection of the output and suggestions for reorganizing the process for small labor intensive production. CYSEC became more technical, but still without losing its amateur standing - in itself a rather unusual combination.

It was also necessary to reinforce the staff who assisted with accounting and management training, to support the graduates in developing economic analysis necessary to secure credit from the state owned banks and small industry assistance programs.

At the same time that CYSEC became more technical and managerial it became more socially conscious, realizing that its outreach to poorer and needier groups was limited, and that most of the benefit was going to middle-class educated boys. In partnership with bustee social workers CYSEC sought to open its programs to boys from the poorest areas of the city. This required adding social and community organization capabilities, again mostly through volunteers. It was not simply a matter of advertising that the opportunity existed and awaiting a massive enrollment of poor boys. The boys had to be contacted in their own bustees, the advantages of the program explained, and encouragement provided for the boys to venture out of gang dominated areas. In some cases the boys would only come out and participate in their own groups, or gange, and it was necessary to enroll groups rather than individuals. There was also a need for constant follow-up and chasing of these boys who tended to come one day and disappear for several. Counsellors had to mediate for real or fancied insults which were product of social distance between the boys, the instructors and the businessmen.

Subsequently, it seemed sensible to locate some of the training sites directly in the bustees. Some groups were highly communalized, and wished to run community enterprises that would benefit their associations and total memberships rather than yield profits for individual entrepreneurs. One enterprise in plastic injection molding was put in the back room of a "community association" in the bustee, and eventually there were four bustee sites for training and production. This was a response to a problem of poor mobility among these communities, due to scarce transportation from slum areas, communal fear of venturing off the home turf, and the inconsistent attendence and work discipline.

In some cases the staff of CYSEC served existing bustee enterprises, providing not so much training as business advice and counseling and most importantly in making contacts with bankers and other sources of credit for expanding existing small bustee enterprises. Here the social distance between the bustee entrepreneurs and the bankers and their technical analysts was a great barrier. It was frustrating for the counsellors who accompanied the small businessmen from the bustees to sit while the bankers picked apart the credit worthiness of a scheme which was running in a bustee context of which the bankers knew nothing. The bankers' engineering associates demonstrated their entitlement to a steady salary by criticizing the technology of every project. Experienced bustee entrepreneurs often felt harrassed by the delays and reporting demands of credit agencies, whose concerns could sometimes be laid to rest only by repeated filling out of forms and concocting reports in an economic gibberish having no discernable relationship at all to slum conditions bearing on project viability. The bureaucratic conception of high finance and the wisdoms of street knowledge seemed to have little in common, either in the language of economics or the perception of ingredients for success. CYSEC experience in bridging these two worlds illustrates an important side of such a scheme, that it absorbs huge amounts of staff time for writing nonsense, assuaging seemingly irrational fears, and pushing and hauling equipment.

Another advantage of locating in the bustee was the demonstration effect for many more young people who would never have seen what was going on had it been staged outside. In the later stages CYSEC became a curious blend of increasing technification running along with increased social outreach. This caused tensions that were both creative and destructive, and many of the staff protested the indescipline of the bustee boys, the softness of the social workers and the "waste" of space and time on unpromising businessmen. Other staff members were rewarded by the increased opportunity to serve new groups - the poverty enclaves, different religious communities (Muslim), and new linguistic groups (Urdu, Oriya and Hindi speaking people). Through most of the training Bengali was the dominant language of instruction with occasional mixtures of English and Hindi.

Another form of outreach, in addition to the thrust toward serving deprived groups, was to broaden the coverage from exclusive service to males to include women's programs. The impetus for this came from some of the wives of the members of the Managing Committee and from some of the social workers, predominantly ladies. Progress in developing women's activities was slow, and relatively traditional in selection of fields. Sewing and clothing design and assembly were the early activities, as well as food preparation. Some advisers tried to point out that electronics was a promising field for women, that in fact many industries in the developed countries hired predominantly women for such work, but this line was resisted. As of 1975 the women's activities were primarily traditional.

A final development of CYSEC was in pedagogy and the rationalization of training. At the time of the close of this report, in 1975, this initiative had not developed as it was envisaged in theory. The notion was that training would be based on market studies and the identification of products and services needed. When the field was saturated CYSEC would move out of it and start in new products and services. This worked all right, with some lags in closing down programs and projects that were no longer in demand or viable. Another notion was that in the case of some products, the training would be piece-wise, over time, i.e., the participant would be trained in a specific product, perhaps go out and manufacture and sell this product, and later return for training in another line having a similar technology. Over time, the trainee would attain mastery in the production of several products and eventually master of a field. In this way master workmen were in fact being developed in industry. The arrangement has advantages of better spacing between learning and practice than the usual relationship of training to production. A training concept such as this would have required great flexibility in CYSEC scheduling and instructional organization, and the directors of the instructional program did not agree with the concept, although De argued for it strongly. Up until 1975 CYSEC still operated one single training program per individual, and when participants learned the process and established their interprise for production or service they went out and did not return for further cycles of training. Nevertheless, a continuing contact was maintained between former participants and the counselling and support staff who continued to counsel partners and assist with marketing and business contacts. An evaluation of CYSEC, through a questionnaire administered to former participants, was made in 1974-75, and participants reported that what they most wished in continuing support was assistance in enterprise management and marketing. CYSEC was attempting to provide this as the time period covered in this case ended, early in 1975.

SYSEC and knowledge networks. Knowledge network strategies can be guided by examples like CYSEC both in suggesting the kind of technical assistance initially needed to mount this sort of program, and in subsequently helping other communities and other nations learn from this experience. Despite its small scale operation, CYSEC is an interesting test case for knowledge network design because it addresses a central planning issue of adapting education to employment opportunities. It also focuses on the distinctive problem of outreach to poor communities, and it addresses the current concern of many planners for building on local initiative and striving toward local self-reliance as a component of larger development strategies.

CYSEC also illustrates the need to balance generalized concepts, models, and theories of planning with highly particular knowledge of local conditions. This raises again a central consideration in the design of networking strategies: how to define the conditions under which knowledge from one locality is valid for another? or, how to adapt knowledge from one site to another, as opposed to simply injecting new knowledge without opportunity for its modification, evolution, and refinement in a new setting?

This issue can be expressed in terms of a more general challenge posed for knowledge networks: the larger issue is whether any specific body of knowledge can be not only transferred and applied in new settings, but validated through a process of exposure to other knowledge, which acts as a catalyst for appropriate evolution of transferred knowledge to fit local conditions. This problem of interface between one type of knowledge and the other has been alluded to in other sections of this study. Attention has mainly focused on confrontation of general theories with local conditions - the necessary dialogue between universals and particulars, between grand strategies and close-up "missionary-style" treatment of development problems, between top-down and bottom-up approaches, between codified and contextual knowledge bases, between "rational comprehensive" planning and alternative planning styles. The remainder of this chapter will deal with a somewhat different dimension of the problem - the issue of interface between theories of planning method and theories of substance underlying educational planning. The disparities between these theories sketched out earlier in general terms will now be re-examined in the specific context of the CYSEC experience. In other words, we will attempt to identify the kind of demands CYSEC-like programs would make on knowledge networks for integration of methodological and substantive knowledge in educational planning.

First, in what ways does the CYSEC experience implicate theories of educational planning method? One of the strengths of this program is that it did draw on a systematic, functionalist, economic logic of using scarce resources to their utmost in creating skills and jobs. Many professional skills were focused on the economic viability of jobs for graduates, and of training procedures to fill those jobs. Businessmen, technicians and scientists, economists, development planners, financiers all plied their knowledge to this task. In some cases, hard-headed economic considerations prevailed over other substantive theories bearing on policy determination. Non-profitable enterprises were closed down along with their feeder training programs; piggery, chicken-raising and plumbing projects were sustained in the face of distaste for them by participants; credit application procedures were followed even when they appeared nonsensical to veterans of local street enterprise. Important elements of rational comprehensive planning can also be seen in the work of the Managing Committee, in clarifying goals, searching for new program options, anticipating markets and designing technical responses, coping with resource constraints, and continually testing the local environment for barriers and shortcuts to implementation of plans. CYSEC was fortunate in having most of the professional skills at hand to mount and sustain this effort. In most other situations, effective educational planning would depend more heavily on transmission of skills and methods through an appropriate knowledge network.

Turning to the second area of concern, what does CYSEC suggest for theories of educational substance, and what distinctive implications would these have for design of knowledge networks? In many respects, substantive understanding of CYSEC implies the need for knowledge networks operating within a distinctive historical context. This is not to say the conditions found in Calcutta are unique, but they are distinctive enough to require careful matching with other regions sharing a knowledge network, whether elsewhere in India, Asia, or poor communities elsewhere in the world. For example, CYSEC requires substantive understanding of sources of voluntary commitment by a business community. In the case of

CYSEC, this involved the historical cinditions of Naxalite violence, the alienation of the middle class badhra lok, the tensions between Calcutta and the Center Government, the frustrations of dealing with calcified structures in labor, industry, and government. The names might be different in other parts of the world, the problems less intense, and the disillusionment with conventional channels for solutions less profound. Nevertheless, analogous conditions do exist elsewhere. Appreciation for the social dynamics generated by such a situation must clearly enter into education planning as addressed to programs like CYSEC. The substantive theories that deal with the social and psychological phenomena involved, however, are entirely missing from theories of educational planning method. The reason begins to be apparent in the context of CYSEC: the theories of method applied to this situation are fairly universal, provided the planner is interested in the kind of problems they address. Theories of substance - some of them at least - apply to specific historical conditions, requiring a strategy of knowledge networking specifically designed to link communities and regions sharing similar substantive conditions.[1]

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[1] Reference to "historical" conditions denotes two things: first, the comprehensiveness of the social processes involved, which may include philosophical, ideological, military, and religious forces as well as more familiar dimensions of planning analysis involving economic, political, administrative, and geographic factors. Second, the term "historical" calls attention to the temperal dimension of analysis, reflecting on one hand the inertia and continuity of events and the decades-long time horizon for historically significant development processes; and on the other hand the occasional confluence of circumstance and social forces which produce sudden transformations of social institutions and commitment of purpose. In both respects - the comprehensiveness of analysis and the temporal interplay between statis and dynamic social forces - theories of substance treat dimensions of educational planning that theories of method ignore.

In other respects, development of programs like CYSEC would draw on (and also feed into) knowledge networks with a more broadly shared body of substantive educational theory. For example, understanding of poverty can draw on theories and experience from almost every country in the world, whether poverty is analysed as a cultural phenomenon, or an outcome of regional, national and international economic structures, or as a matter of satisfying basic needs, or a problem of establishing viable self-reliant communities. Similarly, the design of efficient and effective non-formal alternatives to traditional classroom teaching - and especially the combination of education and productive enterprise - can draw on a vast range of international theory and practice, both in LDCs and MDCs. CYSEC is also to be understood in terms of substantive theories relating to non-cognitive educational outcomes - the domains of affect, self- and group-identity, meaning, problem-solving, creativity, capacity for initiative, and other learning and behavioral processes almost completely neglected in theories of method currently used in educational planning. These substance issues are also neglected as content matter in educational planning knowledge networks. The same is generally true of other substantive theories bearing on CYSEC: theories of economic development addressed to urban-rural linkages; theories of social mobilization involving dispossessed, disenfranchized, or otherwise alienated groups; theories of cyclical involvement in work, training, and social activism; theories of organizational development and problems of "allometric" development (by which a system's functions and structures must be modified as its scale increases).

4. Conclusions. Implications for Design of Knowledge Networks.

The case study of CYSEC does not offer a prescription for designing knowledge networks so much as a set of criteria for evaluating present and future network designs. First, it reenforces a point suggested throughout this study, that knowledge networks must be designed to learn as well as teach. They must not be set up simply as systems feeding information from MDCs to LDCs, but must function as "dialogue systems," in which learning and validation of knowledge takes place on the part of all participants.

Second, knowledge networks have traditionally addressed themselves to educational planning almost exclusively interms of theories of method, while neglecting the theories of substance which also have international validity and which bear equally on the viability of schemes like CYSEC. Knowledge network strategies should be mindful of maintaining a better balance between method and substance.

Third, there are aspects of educational planning which call for theories of substance that apply to quite selective historical circumstances. These theories, too, deserve inclusion in knowledge networks, but the membership of such networks must be far more selective, and more adaptive over time. This suggests network strategies relatively independent of permanent infrastructure and expensive overhead, with more emphasis on quick response, more tolerance for unorthodox views, and greater emphasis on activity close to the scene of action. For this purpose, a network's headquarters might not be best located in Paris or New York, but in places like the Rural Development Academy in East Pakistan, in the ACPO service area in Colombia, or the CYSEC site itself.

Finally, because of the basic epistemological differences between theories of method and theories of substance, the task of synthesizing these two knowledge bases for educational planning may actually be easier to carry out in practice than in theory. That is, the need for each type of theory as a context for applying the other type of theory may best reveal itself in the accumulation of case studies of educational planning that have led to implemented programs that can be evaluated with historical hindsight. The comparative case study approach has a long history of use in the fields of law and business administration, with newer applications cropping up in graduate schools of economics, political science, and development planning. The usefulness of the case study approach to educational planning can be seen in the work on rural education undertaken for the World Bank, UNICEF, and the International Council for Educational Development by Philip Coombs and Manzoor Ahmed (1974, 1975). Knowledge network design might encounter its Firmest ground in building on this approach, as the best medium ofr mutual confrontation and integration of theories of method and theories of substance in the field of educational planning.

CHAPTER VII

SELECTED STRATEGIES FOR TECHNICAL ASSISTANCE OUTREACH

This chapter provides a selective review of outreach strategies suggested by earlier sections of the study. This review is descriptive with respect to organizations where the strategies are now operating. They are not offered as specific recommendations, but simply as a catalogue of possibilities that sponsors, clients, and technical assistance agencies might wish to explore further.

Strategies are considered under five general categories, listed roughly in order of increasing efficacy and increasing costs of implementation: (1) Paper systems; (2) Knowledge brokers; (3) Face-to-face discussion; (4) Institutional collaboration; (5) Jointly conducted action research. These strategies might be applied individually or in combination. Within each strategy, tactical options are discussed or implied, allowing for adaptation to particular circumstances.

Insofar as knowledge utilization is considered here mainly from the standpoint of outreach from a technical assistance agency to clients, the strategies and tactics reviewed are mainly forms of "knowledge push" or Top Down Planning (see Chapter III). Such tactics have to be both differentiated from and reconciled with "knowledge pull" perspectives on the same problem (see Chapters III, IV).

(1) Paper systems. Newsletters have appeared as a common feature of technical assistance agencies. Several U.S. universities send out periodic information on such things as data resources available in educational planning at each university, library size and new acquisitions,

backgrounds and expertise of graduate students and faculty, pertinent information about ongoing projects, and problems and insights into field operations.

The U.S. Agency for International Development publishes technical reports and papers through the Government Printing Office, providing another opportunity for knowledge exchange. These reports communicate the state of the art in AID's program of field analysis and on internal policies with potential impact on universities. Staff interviewed at Britain's Overseas Development Ministry cited AID's dissemination of technical reports as a useful practice that ODM itself intends to adopt in the near future.

SIDA (The Swedish International Development Agency) also puts a great deal of emphasis on diffusion, with an important difference. Rather than disseminating quantities of material under its own name, SIDA supports libraries and publications of other agencies which have world eminence in particular fields. (One sixth of IIEP's support is from Sweden.) This has several potential benefits. It minimizes printing costs; it provides a world-recognized, centrally accessible source of information; it probably reduces duplication of effort, insofar as SIDA becomes exposed to the work of other agencies, through its IIEP contact; and it saves readers from being deluged by information from yet another source. Applying this model to other technical assistance agencies, one might think in terms of a collaborative newsletter rather than separate diffusion efforts. A newsletter sent out from one institution can easily be filed unread, whereas one written jointly requires a more direct exchange among the various authors. Some of the present university-based newsletters make some effort to solicit information from other programs, but to some extent they amount to overlapping clearinghouse functions.

IIEP is now publishing its own newsletter, and this is a logical nexus for a worldwide information exchange in the field of educational planning. Professional societies can also serve more selected audiences, especially in linking people who share a particular development philosophy. (The importance of this factor was brought out in Chapter III.) An example is the Society for International Development, which publishes a journal as well as a newsletter.

Paper systems have inherent limitations, however. Education and World Affairs (a Washington-based agency) reported from its own experience that "it is a mistake to prepare a report, distribute it widely, and simply hope that something will happen" (1969, p. 9). This conclusion is echoed again and again in other agencies' experience reviewed in this study. Louis Sleeper did a follow-up study on readership of selected documents circulated at AID, and found that people read only a small proportion of technical reports and policy papers that cross their desks. This emerged despite the fact that the sample of reports he used for this study were selected to be of recognized significance in relation to the desk-persons' own work.

This suggests the possibility that people generally do not read what they do not solicit, contradicting the premise of most paper systems. It is true that people may store unread material for future reference when it is needed. To this extent, however, it is very difficult to evaluate a paper network, because the important links between information provision and need is so attenuated over time, and so variable, depending on information content. The other outreach agencies to be reviewed put more emphasis on responding to felt needs, and less on maximizing a general and indiscriminate flow of information.

(2) Knowledge brokers. Centralized information analysis centers may prove significant for the preservation of field experience, the review of conceptual development, and in some cases shared access to knowledge useful in educational planning situations in developing countries. First, information must exist; secondly, it must be accessible; and lastly, it must be accessible in a form in which it can be used by planners. There are vast stores of information in existence - almost too much - but the data and information are not always available, or in utilizable form. For this reason data bases, information systems and search coordination systems should be briefly reviewed.

There are two basic types of information banks and systems with information available and usable for educational planning - Document Systems and Fact-Data Systems. Document Systems are basically bibliographical in nature and provide indexed references for search by topics or subjects. The system may also store documents in the form of indexed references which are imaged for complete or partial retrieval. Document Reference and Storage systems can serve to preserve field experience and permit review of conceptual development in education and planning.

In the field of education, ERIC (Educational Resources Information Center) is a comprehensive Reference and Storage System. Under ERIC 20 centers in the United States index and store materials by special categories relevant to education (including "Planning" under "Educational Management"). The centers are linked into a national information system.

The holdings of ERIC have been rather limited on educational planning, amounting to about 50 entries by 1971. Even more limited is the coverage of educational planning in developing countries. In other areas of education the coverage is vast.

The very scope and volume of information holdings requires a second kind of organization and service - Search Coordination Systems. Systems Development Service, a private firm, has 4 million citations on line for interactive search. SDS accesses document reference and storage systems - ERIC, for example - and also specialized versions of fact-data bases. Among the comprehensive systems accessed by SDS are MEDLINE and MEDCOMP in medicine, CHEMCON in chemistry, and the mind-boggling LSD-TRIP (Library Systems Development Technical Reports Indexing Project). The Lockheed DIALOG system accesses many of the same bases.

The second major component of information systems are the FACT-DATA systems. These systems are generally calssified into (1) Social Science Data Archives, (2) Management Information Systems, and (3) Other Private or Semi-Private Systems. For educational planning the Social Science Data Archives are most relevant, for these information bases contain a vast holding of economic, demographic, political and social data which is accessibly for analysis and re-analysis. These information banks can preserve field experience, provide data for testing conceptual schemes, and also provide data on actual in-country situations where educational planning is going forward. In the Social Science Data Archives the major bases are:

(1) The Roper Public Opinion Research Center, which stores for retrieval over 7,000 sample surveys from the U.S. and 43 other countries.

(2) The Inter-University Consortium for Political Research, which has major studies in the U.S. and cross-national studies as well.

(3) The Bureau of Labor Statistics Base has mainly U.S. data, but there is also:

(4) The International Demographic Data Directory which covers demographic data in most countries of the world. The international agencies also have extensive holdings of information in the form of indexed and stored documents, and, in some special areas fact-data systems as well.

The problem is not the existence of information, or even the availability of it for a given price or expenditure of effort. The problem is making it more readily available for utilization in educational planning, especially to planners in the poorer countries. This will require:

(1) Simplified and current descriptions of useful information and how to access it. This is no simple problem. Descriptions of systems and bases are almost always out of date by the time information on them is made public knowledge. The systems themselves always lag slightly behind in updating of current documentation, i.e., data in the bases is often incomplete; and the information is rarely as complete, accessible or current as advertised. Hence, providing information on information systems is a never-ending problem. Many systems and bases start up in good times, and go out of business in lean times, to the discouragement of those who would use them.

(2) Training of users in the information that is available, how it may be accessed and how it may be used. After the users are trained they must be constantly re-trained or brought up-to-date through information exchange. Establishing and maintaining users-networks in the countries

of the world is a large and continuing task.

(3) Providing funds for using systems and bases, even where there are only nominal charges for access and service. Almost all systems, including ERIC, involve some cost for use; and poor countries often do not make resources available for such activity.

(4) Providing funds for up-dating and completing information that is most directly relevant as a basis for educational planning knowledge. Before this can be done the information itself must be specified; and again it is not a one-shot operation, but something that must go on over time. Planners and researchers in the poor countries must furnish data as well as draw on it, and this presents, apart from financing and technical processing problems, some sensitive political issues.

There is no easy or inexpensive solution to the problem of establishing and maintaining information systems and user networks for planning, but some modest efforts in surveying and reporting on the information systems, training users, and providing support for use of the systems would yield a worthwhile return to educational planning.

The purpose of most information banks and systems is to provide information that exists at large on selected problem areas. Few serve as knowledge brokers focused on the specific link between developing countries and American university resources. Professional organizations sometimes fill this need, such as the American Association of Colleges of Teacher Education (AACTE), MUCIA and the American Association of State Universities and Land Grant Colleges. On the other hand, the U.S. does not have an organization quite like Britain's Inter-University Council for Higher Education Overseas. There is now a small movement, it seems, to adopt the IUC model to the United States. The IUC helps promote links between British and overseas universities. Recently it has emphasized staff development of overseas institutions and the provision of a broader range of resource bases in England, to prevent an incentuous dependency on particular British departments.

The IUC idea is so attractive in many ways that a few of its weaknesses might be noted. First, it is designed to represent the interests of British universities, even though it professes equal responsiveness to its other two constituencies, comprising foreign universities and the Overseas Development Ministry which provides much of its funding. The relative influence of ODM and UK universities varies according to leadership at IUC. These days the IUC reportedly has less of a "think tank" role than in previous times when its leadership exerted a more powerful, independent influence on overseas policy.

Secondly, the IUC's role is limited by its superficial contact with universities. There are too many university members (nearly fifty in England) for meetings to be very substantive. Representation is usually through vice-chancellors, for whom inter-university coordination is a low priority and in some ways even threatening. There are presently attempts by "young Turks" at some universities to take over these representative functions from the old guard - which at least implies that the IUC has an important enough function to be worth fighting over.

Thirdly, the UK universities' "knowledge sharing" functions in fact seem to be largely the work of independent initiatives taken by particular universities, notably Reading University, whose strength is attributed largely to leadership from Marjorie Mumford. IUC does attempt to encourage other universities to support Overseas Service Committees along the Reading model, but money is tight and there do not appear to be strong university incentives for others to follow suit.

Fourth and last, university roles overseas are becoming much less stereotyped than in the past, and sharing of knowledge seems less practical under a single umbrella institution like the IUC. The IUC's role was clearer in an earlier ear of setting up universities from scratch in the liberated Commonwealth nations: The model was Oxford/Cambridge, and the task was to advise on capital development and general academic planning. It has since become far more complicated than that, and the roles of British universities have grown far more specialized, diverse, and ambiguous. The same can be said about the great diversity to be found among North American universities. A major effort to link universities to foreign aid could have the effect of bypassing other institutions, such as community colleges, whose structures and style are especially appropriate for outreach to rural areas. The Tuskegee Institute is another example of the outreach style, but it has received little mention in university circles, not even by faculty working along very similar lines of outreach to poor communities.

(3) Face-to-face discussion. Education and World Affairs was earlier quoted on its observation that reports do not produce results. EWA also suggested, however, that reports could be useful if followed up by conferences, workshops, formation of committees and planning for program implementation (EWA, 1969, pp. 8-9). There are numerous examples of this, especially among universities working in educational planning. The U.S. Agency for International Development (AID) has promoted the concept of

"Consultative Committees" in connection with educational planning activities that it sponsors, to assist information exchange with similar projects elsewhere. The Consultative Committees include AID staff and could be extended to incorporate officials and scholars from developing countries and other relevant participants.

Given the divergences and potential misunderstandings between sponsors and knowledge generators, the processes of knowledge exchange often requires a need for mutual education, diplomacy, and patient negotiation. Each must understand that the other has different perceptions for good reason, and that the complexity of educational development probablems requires this diversity of views. Barkenbus (1975) has pointed out the diversity of views existing within AID, between AID missions in the field, the regional bureaus, and the technical offices which cut across them. Barkenbus tends to side with one faction or another on various issues. Nevertheless, as argued earlier in Chapter IV, dynamic organizations must be able to tolerate widely divergent modes of interpreting reality. There are no "right" and "wrong" answers, but only intelligent compromises and syntheses between different time-frames for analysis and different locational foci, tasks and objectives. As already noted in Chapter IV, it takes special skills and personality types to deal with the stress of trying to reconcile different organizational objectives and styles.

Job rotation is a possibly useful device for breaking networkers out of role stereotypes so that other people's views can be understood better. The extreme case might be China, where bureaucrats are periodically sent out to live with peasants until they get their "priorities straight." Peace Corps service has a similar function, in its effects of exposing

Volunteers to the problems of development seen as a Bottom Up perspective. Certain technical assistance organizations, including ACPO, AID and HIID rotate personnel between field-work and "home office" staffing positions.

Actual exchange of roles may not be necessary for all purposes. It may suffice that people merely break out of role stereotypes which impose a communication barrier. Chilean educator, Patricio Cariolla once remarked at an airport farewell for him Santiago that international conferences like the one he was about to attend offer three levels of truth: one at the level of formal presentations and discussions; another during the coffee breaks; and a third - the most profound - in the bar when everybody has finally relaxed enough to share their deepest personal thoughts.

This kind of observation does not fit very well into conventional theories of management, and so it tends to pass unnoticed in more "serious" discussions of network design. Yet it contains an important truth, related precisely to the need for breaking out of stereotyped organizational modes in order to make networks function on an inter-personal level.

Another anecdote may reinforce this point. In a discussion at Sussex University, Geoffrey Oldham mentioned that national interests may prove fairly superficial and possible to overcome if discussions can take place in a setting where official roles "don't work." He cited the case of an outstandingly successful international conference held by SPRU (Sussex University's Science Policy Research Unit) in Barbados. At this conference, accommodations were designed to be very modest, with two persons to a room. Most participants, being high-level officials, were appalled. But being thrown together, people began to chat more informally and personal friendships developed. Major difficulties in the formal meetings were successfully attacked with a feeling of "We shall overcome," a very unusual spirit for such meetings. Other Oldham seminar tips:

-- Get the right people - committed, knowledgeable, and critically placed in policy making.

-- Distribute background material, concisely defining the state of the art.

-- One member of the group should have a specific research project in mind. (Plans of action do not come out of general discussions.)

-- Use "old boy" networks - especially graduates of the same training program, but possibly members of past task forces. (In contrast, UNESCO designs its teams precisely to prevent members from thinking too much alike.)

(4) Institutional collaboration. A modest example of collaboration is seen in UCB-Stanford cooperation in sharing a research investigator between the two programs. Budgeted 50 per cent by each university, this arrangement provides a concrete link between the two educational programs.

At the level of more substantial projects, one of the best available reviews of collaboration is Henry Glyde's study carried out at the University of Sussex. This examined past cases of British University links with overseas counterparts, and found that successful links are most likely to develop on the basis of:

-- repeated short-term visits of MDC individuals or pairs;

-- surveys of mutual interests;

-- integration of training with technical assistance efforts;

-- strong and enthusiastic management of the LDC institutions;

-- small scale programs; and

-- core funding of the MDC institution. (It is worth noting that core funding may have been a cause of the success observed by Glyde, but alternatively, it might have been a spurious association, coming as a result of prior competence, interests and successful experience in the MDC institution.)

(5) Jointly conducted "action research." Massachusetts; Palo Alto, California; and the Raleigh Triangle, North Carolina. The U.S. General Accounting Office has prepared a questionnaire for recipients of grants from RANN (Research Applied to National Needs, a program sponsored by the National Science Foundation) that attempts to measure the strength of such relationships between universities, or analogous R&D agencies, and their clients (GAO, TAG 29, 1974). Long-term links have other advantages as well: more opportunity for training and research efforts to complement technical assistance in mutually reinforcing ways (Hannum, 1975); and greater opportunity for personnel to become at home in a foreign language.

The disadvantages of such arrangements are two. One is that they are costly, typically involving large overhead components, and often becoming unwieldy in the process. The second problem is that they give an overpowering leverage to the Top Down approach, which is difficult to balance with similar strengths in Bottom Up organizations acting as counterparts in the field (see Chapter III and IV). The fact that the client's counterpart institution may also be strong (for example, in the University of Chile - University of California program of cooperation) does not resolve this problem, if the client also has a top Down approach to solving problems of poor communities.

This issue was the central focus of a knowledge Networks Conference held at Harvard's Center for Studies in Education and Development in 1975. The problem is to get to the "camel driver." This was a reference to one of the great network transmissions of all times, when President Lyndon Johnson picked a camel driver out of a mob in Pakistan and had direct and much publicized follow-up contact with him. There is a need for contact that goes down and across. Most of the international exchange is just across at a very high level. One schema suggested was to get a team that went down from national to primary group level and to have this team meet with other teams, similarly structured from other countries. Nobody thought this would be easy, given the selection controls exercised by governments in most countries, but it might be the only way to get an exchange that goes deeper than most of those that take place at international conferences - where the exchanges are abstract and lacking situational reality. The model would be something like this:

Country A	Country B	Country C
1. National level Rep. (Minister)	National Rep.	National Rep.
2. Sub-National, State, Regional	Sub-National	Sub-National
3. Local or Institutional	Local-Institutional	Local-Institutional
4. Primary group member(s)	Primary group	Primary group

The problems of accomplishing this are not small ones. The size of the group, if many countries and governments are involved, would make things expensive and unwieldy. Many countries and governments would not encourage people from the levels below national to attend and participate. Many countries, when dealing on an international level, want "representatives," and these are representatives of the government, or party, or elites in power. Many delegations are stacked or packed this way. There would also be a problem that the Minister or other representative from the national level would view himself as head, and things would end up by one person speaking for the nation, even if he didn't know what he was talking about.

The advantages are also attractive. Not only would people with similar problems and perspectives have a chance to relate on an inter-country basis - an opportunity that is rare especially for those at the lower levels - but there would also be a chance to get more coherent relationships and exchanges within country teams. The Inter-American Foundation attempts some of this, but it is limited to people involved in similar programs, for example, rural, family schools.

It would not be too difficult to try, especially if only four or five countries were involved. One place to begin might be in regional groupings that already exist, such as Central American common market, or the Andean Pact. There are already meetings that go on below the national level: representatives of universities in different countries meet, and representatives of groups dealing directly with primary groups meet, especially in the case of religious or mission groups. Also, organizations with similar purposes meet - cooperative groups, Rural Family School Movement, trade unions and syndicates. A natural sponsor for such a trial would be a university, particularly a large and powerful private one with international status, for it could probably bridge - through more informal old boy networks - government and private groups and groups at different levels. Some university people do know farmers and workers in the counties. It was also suggested as a general principal that informal contacts, wherever and however they exist should perhaps be the basis for getting a trial going, and that more formal arrangements could follow.

Failing some kind of mechanism for more effective exchange across and up and down the various levels, there will always be the filtering out of direct knowledge from below, and the transmission of schemes of abstraction from above, and this problem is acute in educational planning or any other field. Something more innovative than the conventional seminars, reports, exchange of scholarly research, and international conventions of VIPs is needed. All participants at the Harvard Conference agreed to this.

In summary then, the discussion dealt mainly with face-to-face contact and exchange, especially on matters of rural development education. This need not imply that more conventional exchange or transmission of knowledge through reports, books, seminars and teaching and training should be abandoned, but something more innovative is required to break the filters that are built in at various levels of the system.

For reasons of both cost and effectiveness, jointly conducted "action research" on educational planning problems might look to strategies for purchasing university expertise without the mobilization of the university as an institution. A major example of this is the use of "panels of experts" at the Intermediate Technology Development Group (ITDG) in London. These draw on people from several universities, whose interest in solving real problems with other motivated colleagues in a well-focused subject area, indices many to serve on the panels without remuneration. For this, among other reasons, ITDG's overhead budget is remarkably low for the volume of its activities.

One problem this encounters is the availability of faculty to attend such panels, for reasons of distance and scheduling. This is compounded by ITDG's insistence that panel members follow up their deliberations wherever possible by visits to sites of application, and by dialogue with potential implementors in government, business and recipient communities.

Another suggested model of low-overhead action research would give greater responsibility to advanced students in technical assistance roles. The Foreign Area Fellowship Program, among others, has moved toward this approach in providing support for doctoral research abroad, premised on the student's taking an active, supervised role in an LDC agency. At another level, Ahmednagar College's students were responsible for much of that institution's success in outreach to rural communities (see the case study in Chapter III). One idea raised and elaborated in the course of this study consisted of giving students credit for projects in place of theses (an alternative now open to students in the UCLA Masters Program in Urban Planning). Student work would be styled after Peace Corps and Operation Bootstrap arrangements, and linked to small-scale development operations in rural areas. It would also be tied in with extension services of host country universities. Students would be expected to deal both with a specific sector problem (housing, education, agriculture, engineering, health, cultural programs), and also with the infrastructure that would make such programs implementable on a larger scale, such as cooperative management; links with local youth groups or national youth service programs; evaluation expertise; logistics; coordination with formal education programs and school facilities; and other support systems.

This proposal is generally consistent with the broad conclusions summarized in the next chapter. None of the strategies referred to in the preceding pages is offered as specific prescriptions, but some may resonate with the philosophical perspectives of individuals, technical assistance agencies, or educational planning clients. As suggested in Chapter III, philosophical views will be a decisive factor in making such programs work.

It should be recalled that this chapter has approached educational planning outreach strategies from a Top Down, knowledge-push perspective. Whatever strategies and tactics prove useful for adoption, care must be taken to integrate them with parallel strategies for Bottom Up networking, involving support of activities and organizations closer to the primary groups (see Chapter IV). Students may prove more flexible than faculty in keeping a foot in each camp. Future exploration of networks would therefore probably benefit from their inclusion, both as a source of ideas and as participants in actual programs.

CHAPTER VIII

CONCLUSIONS

No attempt will be made to summarize previous chapters. The purpose here is to weave threads of earlier material into a more coherent pattern of practical implications deriving from the research.

1. Building on what exists. Throughout the research carried out for this study, new network proposals were encountered that failed to evaluate or even acknowledge long established practices along closely similar lines. This lack of historical memory has several causes. Among many scholars, it derives from an unproductive tradition of policy analysis which is based on abstractions rather than practical planning experience (see Chapter VI). Among many people in the field, it arises from an opposite failing, the unwillingness to acknowledge valid cross-cultural and cross-historical generalizations which justify the effort to transfer knowledge from one situation to another, which is, after all, the funcamental raison d'etre of knowledge networks. The chief advocates of networks are consequently drawn from the ranks of scholars, injecting a bias toward the superiority of academic expertise over the more anecdotal lessons of real world social practice. This fosters an image of LDC counterparts as knowledge users rather than generators, and it fails to acknowledge the value of their own solutions to problems in the field of educational planning.

The case studies on ACPO and Ahmednagar reported in Chapter III suggest specific possibilities for building on existing success. Yet these cases scarcely begin to tap the wealth of experience available. Information from rural communities is highly filtered and has fewer channels of diffusion than the knowledge produced by international agencies. A major effort is needed to restore the balance. One of the most important contributions that technical assistance organizations could make would be to offer a mirror to developing countries of what they are doing well.[1] An important parallel function of network sponsors would be to provide resources for successful programs in the field to undertake training and outreach functions of their own. AID support for ACPO is a good example (See ACPO case study in Chapter III.)

2. Educational planning knowledge networks must operate through more than one form of knowledge exchange. As suggested in Chapter II, planning generally involves two kinds of knowledge bases, reflecting two sets of purposes. One of these is the conventional base of codified data, applied to fairly well-defined problems in well-established institutional settings. This is the meat and potatoes of planning, and it has applications either to delimited problems like equipment allocations or far-reaching issues like urban/rural and rich/poor disparities.

Another function of planning is to keep the big picture in view, and this calls for a more subjective knowledge base, a less institutionalized way of formulating problems, and first hand contacts with the the "intact reality" which primary groups experience in their own lives. This was discussed in Chapter II in connection with the alternative knowledge bases for educational planning; it was expanded in Chapter III to consider other variables in the Top Down/Bottom Up dichotomy in planning

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1. Some of the work at ICED exemplifies this approach. See Coombs and Ahmed (1974), ICED (1975), Thompson (1975).

2. AID support for ACPO is a good example. See Case Study E in Chapter III.

philosophies; and it was further discussed in Chapter IV in connection with the issue of differentiating and reconciling tensions between these various alternative perspectives. Based on these considerations, knowledge networks can be seen to perform highly differentiated functions.
to the argument of Chapter VII it is probably ineffective to compromise this needed differentiation by incorporating the several functions into the same network. Multiple networks are needed.

3. University roles. It can further be said that universities have the knowledge base for doing both kinds of planning. They can engage in Bottom Up as well as Top Down efforts (see the Community Service Voucher Program at Northwestern University and the work at Ahmednagar, Case Studies C and F). They can raise issues which define the larger context of planning efforts (work at Sussex University being a good example), even though they are reluctant to deal with contextual knowledge that relates to local realities of a host country, in the face of university reward structures. Universities also provide a vital resource base for specialized knowledge.

4. Inter-agency coordination. Coordination among technical assistance agencies from various fields of educational planning seems both difficult and probably invalid to attempt apart from a particular field site where the knowledge is to be applied. The futility of coordinating knowledge in places remote from applications can be argued on several grounds: (a) the improper calibration of input-output relationships on the basis of averaged data (see Chapter II); (b) the dubious moral and political value of constructing a picture of the client's world without setting foot there or inviting his participation or, better, putting it in his

own hands; and (c) the cognitive and psychological barriers to reconciliation of philosophies and academic disciplines when experts have no transcending reality (such as a field site) that they can share (see Chapters IV and VI).

5. Regardless of the targeted beneficiaries of educational planning, the poor suffer most from planners' mistakes. The evidence for this is based on historical anecdotes that suggest this pattern: costs of correcting errors in planning are paid out of programs that would have benefitted the poor. Among all groups, these are the least organized to resist target cutbacks affecting them.

Educational planning is now acquiring improved data and methods for defining the identity and needs of poor communities (see Chapter II), yet the advances have not been incorporated into the practice of cost-effectiveness analysis (Chapter V). Theoretical work is advancing rapidly in this area, but the theory is still in need of real world applications.

6. Cost-effectiveness analysis as traditionally applied cannot do justice to the evaluation of network options. No such applications have been attempted among the organizations surveyed in the course of this study. Networks defy many requirements of the cost-effectiveness method. They link people who perceive different outcomes at stake (Chapter III), and who usually disagree on the definition of knowledge "utilization" (Chapter I, part 3). Intended outputs are multiple and often non-quantifiable, and some outcomes are unintended. Important costs may also be non-quantifiable (Chapter V). For Bottom Up networks, effectiveness criteria vary for each project (Case Studies C and D). Important

input/output relationships will vary according to local circumstances (Chapter II), or will be modelled differently according to the analyst's development philosophy (see the "Descriptive Variables" in chapter III). More embracing models of network input/out relationships hinge around debatable premises about the positive or negative impacts of technical assistance, for example in regard to self-reliance. Data is often missing even for more immediate outcomes, so that serious distortions are introduced if statistical relations are calculated using the partial data available.

Despite all these problems, network alternatives will perforce have to be evaluated, and they can be, provided that a method of comparisons is used that allows all consideration - monetary effects, quantifiables, and intangibles - to be considered simultaneously in the same tableau. This requires reference to a very limited number of validly comparable options, and attention to the richness of each option as an "intact experience." This intactness must be based either on fully explored costs and effects of existing programs, or else based on scenarios constructed by joint effort of many experts dealing with the same site of applications, and including the participation of the target population (Chapter VI).

7. Some networking problems appear tractable, others possibly insoluable. Chapter I, part 2 reviewed the broad history of technical assistance programs, defining the rationale of network strategies as a response to earlier problems, and identifying the problems now arising from the network approach itself. The latter include:

(a) the problem of orchestrating a part-time commitment to outreach functions among university faculty;

(b) keeping generalizable knowledge faithful to the complexities of action in particular sites;

(c) the paradox of helping others to become self-sufficient; and

(d) the problem of unequal partnerships, unresolved by international agreements because they arise within LDCs themselves.

(a) The first problem, concerning split commitments of university faculty, finds partial solutions in tactical arrangements alluded to earlier in this chapter. Its deeper causes are rooted in university reward structures (see Case Study B) which can only be overcome at significant personal cost (Case C), or by major revolutions in the philosophy of higher education at particular institutions (Case F), or by working outside of universities altogether (Cases D, E).

(b) The second problem, concerning the reconciliation of general theory and local realities, seems tracible, but only if the contradictions of doing both at the same time are fully recognized, and steps taken to reconcile them (see Chapter III, and especially Chapters IV and VI).

(c) The third problem, concerning the self-help paradox, has not been fully resolved. Some organizations claim success in helping others help themselves without imposing new forms of dependency - ACPO most convincingly, Ahmednagar College possibly, and the IAF and community Voucher Programs in a more limited way and on a smaller scale. (See Chapter III). Judging by this, mixed (Top Down/Bottom Up) strategies seem most effective. Interpretation of results, however, depends on the observers basic beliefs regarding values, perspective for viewing the problem, and theory of history. It can be argued (as in Chapters III, IV, and VI) that there is not a smooth transition between knowledge supplied from MDCs and technical assistance agencies on the one hand, and seeing things from the point of view of the people affected in the countryside. To an international sponsor or technical expert, the Green Revolution work of Mexico's CIMMYT looks well adapted to the country's needs with respect to gain production and the health of the agricultural sector. From the standpoint of someone living in the countryside, however, it spelled ruin for a class of ejidos swept aside by the commercialization of agriculture. There is no way to reconcile these views about the role of knowledge. The contradiction arises from basic differences in assumptions about the organization of social relationships. There is a watershed between perceptions of the same phenomenon that can never be reconciled, except from the perspective of one or another social class.

(d) The fourth problem concerns the matter of equal partnership within LDCs. Here, too, one's view of the tractibility of the problem depends on philosophical premises about equality and beliefs about social processes. Two points are suggested by this study: one is that educational planning by itself would be unlikely to change the political economic structures affecting relative social status among groups. The other point is that we can identify institutions doing good work directly in touch with the groups we want to reach (see Case Studies, C, D, E, and F). These deserve support fully as much as more global efforts to rationalize education as a total system. If any doubts are held about the ultimate good that educational planning can do, the logical way to hedge our bets is to increase the proportion of resources injected directly into the target community.

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